PREVALENCE AND RISK FACTORS OF PERIODONTITIS IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE

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Aim: the primary aim of this study is to explore the prevalence of periodontitis in patients suffering from inflammatory bowel disease (IBD), specifically in patients with Chron's disease (CD) and ulcerative colitis (UC) compared to a control group without IBD matched for age and gender.

Methods: a case-control study was conducted recruiting 150 IBD affected patients (86 with CD and 64 with UC) and 147 healthy patients. Periodontitis was diagnosed using CDC/AAP case definition and assessed via a full-mouth examination protocols. Confounding factors were explored using logistic regression models.

Results: evidence was found for a significantly higher prevalence of periodontitis in IBD patients compared to healthy group (76.09% vs 56.54%, $p < 0.001$), specifically concerning severe periodontitis (32.87% *vs* 23.25%, $p < 0.001$). The differences were magnified in the < 65 years age group, whereas no significant difference was detected between patients with CD and UC. In the multivariate models, IBD patients presented a 3.4-fold higher risk of moderate/severe periodontitis. Moreover, old age, IBD diagnosis and higher full-mouth plaque score were variables highly related to periodontitis in the whole sample. When focusing on IBD patients only, male gender, IBD duration and localization, as well as IBD-associated surgery were proven to be relevant predictors for periodontits.

Conclusions: a significant risk association between IBD and periodontitis was found, raising important prevention and therapeutic opportunities along the gum-gut axis in patients with IBD.

CASE REPORT: ORTHO-PERIO INTEGRATED TREATMENT IN A PATIENT WITH PERIODONTITIS

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Aim: the close relationship between periodontal tissues and tooth movement processes suggests that adjunctive orthodontic therapy may play an important role in overcoming problems of reduced periodontal support in compromised dentitions.

Methods: a 43-year-old patient is diagnosed, by clinical and radiographic examination, with a vertical 8 mm mesial defect to the element 11 and the presence of a diastema between the elements 11 and 21. The first procedure is a non-surgical periodontal treatment hygiene sessions. Subsequently after three months periodontal regeneration is performed with modified papilla preservation technique (MPPT). After the cleaning and removal of the granulation tissue of the defect, deproteinized bovine bone (DBB, Bioss S Geistlich) and derivative of the enamel matrix (EMD, Emdogain Straumann) have been applied. Primary closure was achieved with a 5/0 EPTFE suture. Six months later, orthodontic treatment is performed, with the aim of promoting bone remodeling and improving aesthetic function. A bone gain of 4 mm was obtained 7 months after the MPPT surgery with the current orthodontic treatment. A treatment of 14 clear aligners (Invisalign®) of the upper arch only has been selected as suitable for the patient.

Results: the therapy has given the desired results. The prognosis of element 1.1 is favorable thanks to the quarterly supportive periodontal care program (SPC) and the home oral hygiene instructions explained to the patient.

Conclusions: multidisciplinary therapies optimize quality of the final result in an increasing number of patients.

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SURGICAL REGENERATION OF A 3 WALLS ANGULAR DEEP DEFECT: CASE REPORT

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Background: while treating a tooth with uncertain prognosis the clinician is often debated between extraction and preservation of the dental element. Often, following a well performed causal therapy, surgery could solve large periodontal defects. The purpose of this work is to describe the regenerative of the dental element over time.

Case presentation: a 42-year-old patient is diagnosed with stage "III" grade "A" periodontitis and present a deep distal infrabone defect of 3 walls to tooth 3.7, diagnosed by clinical examination and radiography. We proceeded to the treatment of the site through subgingival causal therapy with mechanical and sonic instruments. After 2 months, at revaluation of the site, the pocket persisted, so we decided to switch to regenerative chirurgic therapy. An incision in the distal crest of 3.7 has been performed and then the flaps were elevated full thickness to be able to directly access the bone defect. The subsequent regenerative periodontal therapy was performed after degranulation of the defect and grinding of root surface. The grafting material used was a spongy and cortical bone of equine origin inserted into the defect. No membrane has been used.

Conclusions: after 1 year from the regenerative surgery, the bone defect is completely filled of regenerated bone and periodontal tissue and it's appreciable by endo oral radiography. Clinically, no pathological probing is detectable using periodontal probe.

EXTENSIVE MULTI-DISCIPLINARY REHABILITATION IN A PATIENT WITH VITAMIN D ABSORPTION DEFICIT

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Aim: the aim of this work is to explain how a well-thought-out, multi-disciplinary approach based on a strict scientific method that considers the high restorative potentials of the organism can resolve a highly compromised situation in a patient with severe periodontitis associated with a vitamin D absorbency deficit, malocclusions and diastemas.

Methods: since the patient did not respond well to the initial periodontal therapy, we suspected that they had a vitamin D absorbency deficit; a chemical test for vitamin D absorbency was performed and confirmed our suspicions of this deficit.
The team programmed the following therapeutical plan:
- full mouth disinfection;
- normalise the blood serum levels of vitamin D;
- periodontal surgical restorative therapy;
- orthodontic therapy and fixed prosthetics rehabilitation.

Results: the results for this clinical case were extremely satisfying, we were able to:
- bring the periodontal illness under control;
- rehabilitate the patient both functionally and aesthetically.

Conclusions: vitamin D deficiencies are common in population, as is periodontal disease. It should be remembered that sometimes, failures of correctly performed local therapies could depend on systemic clinical conditions that must be investigated. Thanks to the collaboration and communication between specialists from different sectors of dentistry, the clinical case has been solved with absolutely satisfactory results.

SURGICAL TREATMENT OF PERI-IMPLANTITIS: 1 YEAR FOLLOW-UP CLINICAL CASE REPORT

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Aim: the purpose of the present case report is to describe the surgical treatment of a peri-implantitis lesion associated with a reconstructive approach.

Methods: a 56-year-old female nonsmoker patient presented signs of peri-implantitis on an implant in 3.6 position. Bleeding on probing (BoP) was positive in all sites, probing depth (PD) was up to 10mm and an intrabony defect was visible on radiograph. Non-surgical treatment was consequently practiced. Since PD was still up to 10mm and BoP still positive 6 months after non-surgical therapy, the implant was treated with surgical treatment consisting in open flap mechanical debridement associated with chemical decontamination with chlorhexidine; the defect was filled with collagenated bovine-derived xenograft, covered with autogenous connective tissue graft (CTG) and the flap sutured. The patient received post-operative instructions and follow-up visits and supportive therapy were scheduled every 3 months up to 1 year of follow up.

Results: at 12 months after surgery PD was reduced and BoP or suppuration was absent in all sites. Moreover, a radiographic bone fill was observed.

Conclusions: the present case report showed the positive effects at 12 months of a reconstructive surgical treatment with the addition of a CTG for an implant with a peri-implantitis.

LATERAL CLOSED TUNNEL TECHNIQUE AND CGF MEMBRANE IN THE TREATMENT OF GINGIVAL RECESSIONS

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Aim: this work demonstrates how it is possible to restore the physiological festooning of the gingival margin in the presence of gingival recessions by means of a minimally invasive surgical-parodontal approach, using an autologous CGF membrane obtained from the patient's own peripheral venous sampling.

Methods: a 20-year-old male patient with a thin biotype presented with Miller class I and II gingival recessions from 23 to 26 following orthodontic treatment and with dentinal sensitivity problems. After adequate preparation of the exposed root surfaces, a full-thickness flap was made from 23 to 26 by the tunnelling technique, using autologous CGF membranes, obtained by centrifugation of the patient's peripheral venous blood, as a graft to be placed directly on the bone surface. Suturing with 4-0 Vicryl was then performed.

Results: within 30 days there was complete healing of the mucosal tissues with restoration of a correct level of the gingival margin festooning.

Conclusions: in the treatment of medium-sized gingival recessions, the use of a minimally invasive periodontal surgical technique combined with autologous membrane grafting rich in growth factors results in greater control of inflammatory processes and rapid tissue healing.

MANAGEMENT OF PERI-IMPLANT DEHISCENCE IN ESTHETIC AREA: A CASE REPORT

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Aim: the incidence of a peri-implant soft tissue dehiscence/ deficiency (PSTD) isn't a rare finding. Incorrect implant placement, lack of buccal bone or mucosal thickness and diameter of the implant platform, act as predisposing factors specifically leading to a mucosal recession on implants.

Methods: a 59-year-old woman was referred to the Department of Periodontology at the University of Milan, Italy, for diagnosis and treatment of peri-implant soft tissue dehiscence/ deficiency (PSTD) in maxillary central and lateral right implant. The apical shift of the gingival margin revealing the greyish color of the implant is unacceptable to the patient. The central implant was diagnosed as a class IVc PSTD by Zucchelli, the lateral implant as a IVb. The central implant was removed, a platform technique has been performed in order to manage a class III ridge defect. Meanwhile the lateral implant was treated with CAF + CTG.

A temporary pontic was screwed onto the lateral implant abutment and was reduced to allow the postsurgical soft tissues to mature without interference by the prosthetic material. After 10 months from the surgical procedure, the final restorations were delivered.

Results: at the 3 months follow-up visit, the patient presented with a complete coverage of the previous PSTD. Inter-proximal papillas were not fully represented, but the clinical condition was considered more than acceptable by the patient.

Conclusions: correct diagnosis and treatment planning are crucial for the correction of PSTD and the provisional prosthetic management had a critical role in the successful outcome.

MODIFIED LIP-REPOSITIONING TECHNIQUE (MLRT) FOR GUMMY SMILE

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Aim: the aim of this study was to compare the various surgical treatments for gummy smile presented in scientific literature with particular focus on Modified Lip-Repositioning Technique (MLRT).

Methods: the study was conducted by researching medical publications from several scientific databases, such as PubMed, Scopus, Embase, Cochrane Database of Systematic Reviews (CDSR), and ISI Web of Knowledge. The core keywords used in this work were: management of gummy smile, lip repositioning, vertical maxillary excess.

Results: this study focusses on reviewing a recent technique for repositioning the lip treatment of gummy smile: the MLRT. This novel technique adopts a numerical calculation to define how much tissue should be eliminated to avoid recurrence of gummy smile. Moreover, based on input parameters, the formula can be exploited to determine the average width of the mucosal band to be eliminated. The input variables to be used in the calculation are: quantity of keratinized tissue band in millimeters, total supracrestal space in millimeters, location of the cementoenamel junction (CEJ) of the teeth to be treated, maximum papilla display (MPD) measured in millimeters, maximum smile exposure (MSE) in millimeters (from the incisal edge of the central incisors to the free labial border line of the upper lip).

Conclusions: treatment for Excessive Gingival Display (EGD) by esthetic crown lengthening is possible with or without osseous resection. Orthognathic surgery is associated with significant morbidity and requires hospitalization. Muscle severance techniques provide stable results with a timeframe of at least 12 months from full recovery. Therefore, lip repositioning presents itself as a valid alternative treatment for EGD. MLRT is indeed a minimally invasive procedure in managing gummy smile; however, more studies are necessary to fully assess the technique and its stability over time.

EFFECTIVENESS OF RECONSTRUCTIVE PROCEDURE IN THE TREATMENT OF PERI-IMPLANTITIS

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Aim: this case report presents the efficacy of the treatment of an implant showing signs of peri-implantitis with a severe vertical bone defect.

Methods: a 69-years old male patient, non-smoker, without systemic diseases was diagnosed with peri-implantitis on an implant placed in 2.3 position. Probing depth (PD) was 15mm in all the 6 sites examined with bleeding on probing (BoP), and suppuration (PUS). First, non-surgical debridement was performed. After 6 months BoP and PUS were still present, with no reduction in PD, so surgical procedure was scheduled. After local anesthesia, a buccal flap was elevated and mechanical debridement of the defect was performed using titanium curettes in addiction with 0.2% chlorhexidine, the defect was filled with a bovine-derived xenograft and the flap sutured. The patient was included in a 3 months based supportive therapy. Healing was followed up to 24 months, when presence of plaque, pus, recession and PPD were analyzed.

Results: at 24 months following the surgical procedure plaque, BoP and PUS weren't found, PD was < 4 mm in all sites. Furthermore, a significant radiographic bone level gain was detected.

Conclusions: this case report shows the effectiveness of surgical debridement and reconstructive treatment in reducing inflammation, modifying bone morphology and reducing peri-implant probing depth.

DE-EPITHELIALIZATION BY ABRASION OF FREE CONNECTIVE GRAFT TAKEN FROM THE PALATE: CASE REPORT

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Aim: periodontal plastic surgery includes surgical procedures aimed at correcting or eliminating developmental or traumatic anatomical deformations of the gingiva or alveolar mucosa. The most used technique is the de-epithelialized connective graft taken from the palate. The purpose of this article is to show a clinical case where the de-epithelialization of the connective graft removed from the palate was performed by abrasion technique

Methods: the patient shows up with a recession on 4.1, previously treated but never recovered. Periodontal plastic surgery is performed with a connective graft taken from the palate, associated with coronally advanced flap (CAF). The de-epitelilization of the graft is done through abrasion technique

Results: performing periodontal surgery with connective graft taken from the palate and de-epithelialized with abrasive technique, allowed a complete recovery of the patient's problem and, at the same time, facilitated the intervention for the operator, compared to the de-epithelialization technique with cold blade.

Conclusions: in terms of histological composition of the tissue, the two methods have shown no significant difference. On the other hand, the abrasion technique with a high-speed diamond bur, associated with irrigation, allows greater ease and intraoperative precision. It is therefore, considering what we found out during our clinical practice, more appropriate to use this type of intervention, especially for operators with little experience.

CORONALLY ADVANCED FLAP ASSOCIATED WITH CONNECTIVE TISSUE GRAFT: A CASE REPORT

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Aim: the purpose of this case report is to solve aesthetic and functional problems related to the presence of recessions by the execution of a coronally advanced flap. Due to the lack of keratinized tissue, a bilaminar technique was performed.

Methods: the treatment plan consists primarily of performing professional hygiene and educating the patient in the use of an atraumatic brushing technique. A mucogingival surgery is performed through the creation of an advanced coronal flap associated with the graft.

Results: clinically, after five months of follow up, the keratinized tissue on the vestibular-apical side of the elements 45,44 remained stable over time, leaving no scarring outcomes and allowing good camouflage of the treated area in terms of color and thickness.

Conclusions: when occurs a marked symptomatology associated with multiple recessions and a lack of keratinized tissue, root coverage performed with a bilaminar technique may be considered a procedure that provides satisfactory results by increasing the likelihood of achieving greater root coverage than coronal advanced flap.

ORTHODONTIC TREATMENT AND GINGIVAL HYPERPLASIA: A CASE REPORT

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Aim: this case report shows a case of gingivectomy performed in a young adult patient undergoing fixed orthodontic therapy, suffering from generalized plaque-related hyperplasia. Since the patient's oral hygiene was poor, the orthodontic treatment had to be interrupted.

Methods: in this case, 15-year-old patient who developed gingival hypertrophy during orthodontic treatment, was treated firstly by removing the causal factors such as plaque and the orthodontic appliance that prevented the patient from maintaining proper oral hygiene. Subsequently, after bone sounding, a gingivectomy was chosen as treatment. The multidisciplinary approach that involved the orthodontist and periodontist was fundamental to achieve the clinical result.

Results: the follow-up at one month highlights good soft tissue healing, with no inflammation or pathologic probing depth, leading to oral hygiene improvements.

Conclusions: in this case the gingivectomy was a valid therapeutic choice to solve the gingival hyperplasia and restore a physiological probing depth with resolution of inflammation, achieving satisfactory aesthetic result.

THE USE OF VOLUMETRICALLY STABLE COLLAGEN MATRIX IN ASSOCIATION WITH MCAF: A CASE SERIES

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Aim: the primary aim of this study is to evaluate the efficacy of a xenogenic volumetrically stable collagen matrix (Geistlich Fibro-Gide®) in adjunct with multiple coronally advanced flap (MCAF) in obtaining root coverage. The secondary objective of this study is to evaluate the changes in width and thickness of keratinized tissue.

Methods: 9 patients referring to the department of periodontology of San Raffaele Hospital were diagnosed with RT1 recessions. A total of 28 recessions were found. Patients were treated by an experienced clinician by mean of MCAF with the adjunct of Fibro-Gide®. Periodontal probing depth (PPD), bleeding on probing (BOP), plaque index (PI), gingival thickness (GT), gingival recession (REC), keratinized tissue width (KTW) were evaluated at baseline, 6 and 12 months by a blinded operator.

Results: at the 12 months evaluation a complete root coverage was obtained in the 60.7% of the recessions. The mean root coverage was 76.5 ± 34.02% with a recession reduction of 1,71 ± 0,98mm. No statistically significant changes in KTW were found (0.04 ± 0.69mm, p = 0.814). The difference of GT between baseline and 12 months was 0.36 ± 0.56mm.

Conclusions: within the limits of this study, it is possible to conclude that the combination of MCAF and Fibro-Gide® can be considered when attempting to obtain a root coverage and an increase in GT.

IONOMIC ANALYSIS OF SALIVA IN PERIODONTAL HEALTH AND DISEASE

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Aim: the aim of this cross-sectional study was to investigate the relationship between salivary ionic profile and periodontal status in patients with untreated and treated periodontitis compared to periodontally healthy individuals.

Methods: unstimulated whole saliva was collected from 75 non-smoking and systemically healthy individuals (48 males and 27 females, aged 30 to 69 years), divided into three groups according to the periodontal status (25 untreated severe periodontitis, 25 treated severe periodontitis, and 25 periodontally healthy). The levels of twelve metal ions were determined using inductively coupled plasma mass spectrometry (ICP-MS) and inductively coupled plasma optical emission spectroscopy (ICP-OES).

Results: all the target elements were detectable in saliva. Copper (Cu), sodium (Na), iron (Fe), manganese (Mn) and rubidium (Rb) were significantly increased in saliva of periodontitis subjects compared to treated periodontitis and healthy controls. With the exception of zinc (Zn) and lithium (Li), no differences were detected between treated periodontitis patients and periodontally healthy controls. Cluster analysis was able to correctly separate patients with untreated periodontitis from periodontally healthy individuals. Interestingly, treated periodontitis individual and periodontally healthy controls were classified into the same group.

Conclusions: our promising results suggest that it might be possible to discriminate periodontal health and disease according to the concentration of mineral elements in whole saliva.

A STUDY ON PERIODONTAL PATHOGENS IN ASCVD PATIENTS AND IN FAMILIAL HYPERCHOLESTEROLAEMIA

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Aim: the purpose was to evaluate whether there was a correlation between oral *Porphyromonas gingivalis* (Pg) and *Fusobacterium nucleatum* (Fn) quantity and previous ASCVD in very high-risk patients, with or without heterozygous familial hypercholesterolaemia (HeFH).

Methods: 40 patients with previous ASCVD (10 with HeFH and 30 without FH) and 31 healthy controls were selected. Pg and Fn dosages were performed through qPCR. Oral health status and a full clinical examination were also scored.

Results: in the whole cohort, BMI was correlated positively with Pg abundance and negatively with Fn abundance. Compared to controls, patients with previous ASCVD showed higher Pg (1101.3 vs 192.4, p = 0.03), but similar Fn abundance. HeFH patients with ASCVD had even greater Pg abundance than non-HeFH patients and controls (1770.6 *vs* 758.4 *vs* 192.4, respectively; p = 0.048). No differences were found in Pg and Fn abundance in HeFH subjects in primary prevention, compared to controls.

Conclusions: higher oral Pg abundance is present in very high-risk patients with previous ASCVD, with or without HeFH, suggesting a potential relationship with CV events. The link between periodontopathogenic bacteria and dyslipidemia deserves further investigation.

PERIODONTITIS PREDICTS HBA1C LEVELS AND GLUCOSE VARIABILITY IN TYPE 1 DIABETIC PATIENTS

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Aim: the PARODIA (*PAROdontite and DIAbete*) Project is an observational study aimed at investigating the extent and severity of Periodontal Disease (PD) in patients with type 1 diabetes (T1DM) and the possible association between PD and systemic markers of glucose control and variability.

Methods: patients were consecutively enrolled in a Diabetic Unit. A full-mouth periodontal evaluation was performed, and data on systemic markers of diabetes were collected. Descriptive statistics and logistic and linear models were performed.

Results: a total of 136 T1DM patients (mean age: 45.5 ± 14.6 years) were examined. Periodontitis was detected in 62% of cases (mean CAL: 3.0 ± 0.9 mm): stage III periodontitis was diagnosed in 32% of patients while stage IV in 8%. Mean level of glycated hemoglobin (HbA1c) was 7.5% ± 1.4. Among the investigated factors, mean CAL (p = 0.040) was associated with HbA1c ≥ 7%; 93% of patients with mean CAL > 6 mm showed HbA1c ≥ 7%. Mean CAL (p = 0.004), mean PPD (p = 0.005), mean FMPS (p = 0.030), and stage III/IV periodontitis (p = 0.018) predict glucose coefficient of variation (CV).

Conclusions: periodontitis showed a relevant prevalence in the present, well-controlled T1DM population and predicts poor glycemic control (HbA1c ≥7%) and higher glucose variability. The present findings suggest that periodontal infection may have systemic effects also in T1DM patients.

IMPACT OF KERATINIZED TISSUE AUGMENTATION AROUND IMPLANTS: A RANDOMIZED CONTROLLED TRIAL

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Aim: the aim of this clinical trial was to evaluate the effect of increasing keratinized tissue (KT) on implants affected by mucositis in achieving peri-implant health.

Methods: 15 patients with one implant with signs of mucositis (Bleeding on Probing, BoP) with less than 2mm of keratinized mucosa were included in this randomized controlled trial. First, all implants were treated with non-surgical therapy and oral hygiene instruction were provided to patients. Following this phase, patients were randomly assigned to one of the three treatment groups: oral hygiene instruction solely (control group); apically positioned flap (APF) with free gingival graft (FGG) or APF with porcine-derived collagen matrix (CM, Mucograft®). Clinical measurements were performed, at baseline and at 6 months after treatment. The primary outcome was BoP reduction. Keratinized tissue width (KTW) and discomfort during toothbrushing, assessed using a visual analog scale (VAS) were considered as secondary outcomes.

Results: at 6 months BoP reduction was found to be 46.7± 38% at control group, 66.64 ± 25.6% at FGG group and 53.3 ± 44.7 % at CM group. KTW gain amounted to 3.6± 2.3 mm at FGG group and 1.6 ± 1.1 at CM group. VAS scores were 4 ± 3 in the control group, 2.8 ± 2 and 3 ± 1 in FGG and CM groups, respectively.

Conclusions: the present results show that increased KT around implants could be an effective treatment option to obtain reduction of inflammatory clinical parameters.

PERIODONTITIS AND ALZHEIMER: A LINK BETWEEN *PORPHYROMONAS GINGIVALIS* AND NEURODEGENERATION

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Aim: in the last decade, several observational studies have suggested that there exists an association between periodontal disease (PD) and Alzheimer's disease (AD). Periodontial disease is characterized by chronic inflammatory processes that are initiated by microorganisms of the "Red complex" organized in a dysbiotic biofilm. Among the main ones, *Porphyromonas gingivalis* (Pg) and its virulence factors (i.e., gingipains and LPS-Pg) are detectable in brain samples from people with AD. Deficiency in neuronal G protein-coupled receptor kinase 5 (GRK5) has been associated with the early development of AD, favoring the hyperphosphorylation of the tau protein. In this study, we evaluated the role of GRK5 in the relationship between PD and AD.

Methods: we used SH-SY5Y cells either unstimulated or stimulated with LPS-Pg (10 ng/mL) for 12 hours. Protein expression was evaluated with immunoblotting.

Results: our data demonstrate that LPS-Pg resulted in a marked decrease in GRK5 expression levels accompanied by a significant increase in tau phosphorylation compared to untreated cells. Significant increase in tau phosphorylation reflect in the disruption of the association of tau with microtubules, promoting neurodegeneration.

Conclusions: 7hese data show that Pg represents a target for the fight against periodontitis and supports its role in the onset and progression of AD. Future developments could lead to the use of Grk5 as a possible therapy to resolve or prevent neurodegeneration.

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ANODIZED SURFACES AFTER TREATMENT WITH ULTRASONIC SCALING AND AIR-ABRASIVE POWDERS

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Aim: in literature emphasis has focused on the damage of implant surfaces after the use of sodium bicarbonate powder and ultrasonic steel scalers. Anodized surfaces are covered with a thin layer of oxides which prevents corrosion and increases the surface energy. The purpose of the study is to evaluate the influence of decontamination procedures on anodized surfaces from a micro- and nanoscopic point of view.

Methods: three machined and anodized titanium surfaces (RS smooth surface, XA Threaded Microsurface and UTM Ultrathin Threaded Microsurface) were decontaminated with bicarbonate powder and ultrasonic scaling. The topographical analysis of the native and decontaminated surfaces was carried out at 4000x and 1000x magnifications. A surface roughness analysis was performed using a 3D optical profilometer.

Results: the UTM and XA samples exhibited several damages in the form of indentations and irregularities, distributed both on the top and the bottom of the ridges with almost total loss of the anodized layer. RS samples showed the formation of pores and the total loss of anodization. In UTM and XA there is a considerable decrease in roughness (Sa = -60.45%) while the RS sample has a roughness (Sa) greater than 439%.

Conclusions: the study demonstrates how grooved surfaces subjected to an aggressive decontamination treatment resulted in a decrease in roughness while smooth surfaces tend to roughen forming a different nanotexture. Future studies will be needed to understand what could be the most effective way to decontaminate a surface without modifying its topography.

PERIODONTAL LIGAMENT TISSUE ENGINEERING – STUDY OF PDLSCS CULTURED UNDER CYCLIC STRETCH

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Aim: the abilities of periodontal ligament (PDL) in absorbing forces due to mastication deteriorate in periodontitis, which leads to the loss of PDL and supporting alveolar bone. Thus, enhancing the regeneration ability of PDL-derived staminal cells (PDLSCs) is one of the goals of treating periodontitis. We investigated the biological response of hPDLSCs cultured on a flexible substrate (FS) and exposed to cyclic stretch (CS) within a previously developed automated bioreactor.

Methods: FS were optimized by finite element analyses (FEA). Once the best design was defined, the corresponding mold was designed and 3D printed, and FS was made by casting polydimethylsiloxane (PDMS). Digital image correlation (DIC) method was adopted to characterize the FS mechanical behavior under uniaxial stretch and to validate the simulation outcomes. hPDLSCs were seeded on FS and cultured under static or CS conditions (within bioreactor, 15% uniaxial strain, 1 Hz, 90s/6h for 3d). The expression of osteogenic markers was assessed (ALP, COL I, OCN and RUNX2).

Results: FEA and DIC analysis confirmed that the FS design allows uniform strain distribution at the FS bottom. While biological analysis confirmed that CS increases the expression of osteogenic markers (ALP, COL I, OCN).

Conclusions: FEA and DIC analysis allowed the optimization of FS, while biological tests confirmed that CS influences hPDLSCs behavior. Further experiments and investigations are still ongoing, such as, bioprinting of 3D PDLSCs-laden constructs, which will be characterized via nanoindentation. The development of a new bioreactor, for culturing 3D printed constructs under different cues, is in progress.

SALIVARY MARKERS OF OXIDATIVE STRESS IN PATIENTS WITH PERIODONTITIS AFTER THE GASEOUS OZONE THERAPY

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Aim: the purpose of this trial was to determine the effects of gaseous ozone therapy on the oxidative stress in patients with moderate periodontitis.

Methods: a total of 87 patients were included in the study and were randomly divided to receive standard periodontal treatment plus the gaseous ozone therapy (Test Group, n = 43) or conventional periodontal therapy alone (Control group, n = 44). A two-tailed Mann-Whitney two-sample rank-sum test was conducted to examine whether there were significant differences in parameters of oxidative stress between the levels of treatment. A Spearman correlation analysis was conducted the parameters of oxidative stress and periodontal parameters was conducted. Cohen's standard was used to evaluate the strength of the relationship.

Results: the result of the correlation was examined based on an alpha value of .05. There were significant correlations between any pairs of variables. Serum activities of GSH and MDA concentrations were comparable between the study groups at baseline ($p > 0.05$). A significant decreased levels of NO and MDA were registered at 3 months and the concentration of GSH were found to be significantly increased in test group when compared with control group.

Conclusions: short-term supplementation with ozone therapy mitigates salivary oxidative stress in patients with periodontitis.

GAS OZONE THERAPY FOR THE ERADICATION OF *CANDIDA SPP.* IN THE PERIODONTAL POCKET OF DIABETIC PATIENTS

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Aim: *Candida spp.* are commonly detected in the oral cavity of diabetic patients, and *Candida albicans* is the most common single species isolated. The aim of this study was twofold: firstly, to estimate the prevalence of *Candida spp.* in periodontal pockets of patients with type 2 diabetes mellitus; then, to detect the occurrence of *Candida spp.* after non-surgical periodontal treatment plus gaseous ozone therapy vs conventional periodontal therapy.

Methods: a double blinded, randomized, controlled trial was conducted between May 2020 and February 2021. Eighty-seven diabetic patients diagnosed periodontitis were enrolled. PCR-based method was used to direct detection and identification of *Candida spp.* Patients with positive culture for *Candida spp.* were randomly divided into two groups, to receive the standard periodontal treatment plus gaseous ozone therapy (Group A, n = 38) or periodontal treatment (Group B, n = 38).

Results: out of 87 positive PCR specimens, 76 showed positive cultures for Candida species. *C. albicans* was the most prevalent species (48%) 27 of which showed a colony count of $\geq 1 \times 10^3$ and 12 with a colony count of $\geq 1 \times 10^3$ colony forming units (CFU)/mL, followed by *C. tropicalis* (11.5%), *and C. glabrata* (14.5%). The group A and gaseous ozone therapy showed a statistically significant reduction of colony count of *Candida spp.*

Conclusions: the gaseous ozone therapy may be effective to reduce the count of *Candida spp.* in periodontal pockets of diabetic patients.

THREE DIFFERENT APPROACHES ABOUT THE HEALING OF PALATAL WOUND. A RANDOMIZED CLINICAL TRIAL

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Aim: compare which approach could guarantee the best healing of palatal wound in terms of postoperative pain, after epithelialized gingival graft harvesting. A healing index was created by the authors in order to have a tool to assess the healing process in future studies.

Methods: the total sample is formed by 60 patients. Three groups were defined: the control group treated with sponge of fibrine and sutures, the first test group with sponge of fibrine and cianoacrilate, and the second test group with only cianoacrilate. After surgery, patients were given a questionnaire to complete during the first postoperative week. The healing index analyzes: pain, early healing index, epitelialization, bleeding, colour match, sensation loss and necrosis, and it was filled out at 7th, 14th, 21nd, 28th days and at 3rd month.

Results: 26 patients were analyzed so far. The questionnaire has shown a greater pain reduction in cianoacrilate group than the others. No statistically differences from the three groups were found by the healing index.

Conclusions: the study is currently ongoing. Preliminar analysis shows a clearer pain reduction in patients treated with cianoacrilate. Despite this result isn't statistically significant, cianoacrilate could be a valide alternative to traditional techniques even for the reduced time of application.

IMPACT OF BMI ON GLYCATED HEMOGLOBIN CHANGE AFTER NON -SURGICAL PERIODONTAL THERAPY. A MULTIVARIATE

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Aim: to evaluate systemic inflammation after non-surgical periodontal treatment in obese patients.

Methods: a total of 40 obese patients affected by periodontitis, were randomly allocated to either Full Mouth Scaling Root Planing (FM-SRP) group or Quadrant SRP (Q-SRP), respectively. Periodontal parameters, vital signs and inflammatory biomarkers were collected. A multivariate regression model was built to evaluate the predictive ability of BMI on HbA1c change after periodontal treatment at Day90. The complete model encompassed the following predictors: Age; Gender; Smoking; HbA1c; High Blood Pressure (HBP); Group. Afterwards, linear predictions of HbA1c change based on baseline BMI were plotted together with the selected predictors in the final model.

Results: periodontal treatment was successful in terms of periodontal parameters independently of the technique used. Reduction in HbA1c and insulin levels were observed at 3-months ($p < 0.05$ and $p < 0.01$, respectively) in the Q-SRP group, whereas in the FM-SRP group a reduction in insulin level was observed at 3-months ($p < 0.01$). Multivariate regression model revealed that high body mass index (BMI), FM-SRP approach, age > 60 years, smoking, and high systolic blood pressure levels are negative predictive factors for HbA1c change 3-months after treatment in obese patients.

Conclusions: FM-SRP significantly impacts the HbA1c change after periodontal treatment. Q-SRP is recommended in patients with comorbidities to minimize potential risk for cardiovascular events and/or metabolic disruptions.

IMPACT OF POST-OPERATIVE C REACTIVE PROTEIN ON BLOOD PRESSURE AFTER PERIODONTAL TREATMENT

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Aim: to evaluate systemic inflammation after non-surgical periodontal treatment (NST) in hypertensive patients.

Methods: 40 hypertensive patients affected by periodontitis were enrolled in the study. Patients were randomly assigned to FM-SRP or Q-SRP group. Periodontal parameters and BP values were measured at baseline, 1 and 90 days after the NST. Blood collection was performed at each timepoint to assess the level of C-reactive protein (CRP). A multivariate regression model was built to evaluate the predictive ability of Relative CRP increase at day1 on systolic blood pressure (SBP) change after periodontal treatment at Day90. The complete model encompassed the following predictors: Pre/Diabetes; Group; Age; Smoking. Afterwards, linear predictions regarding SBP based on CRP increase at day1 were plotted together with the selected predictors in the final model.

Results: periodontal treatment was successful in both treatment groups, exhibiting improvements in all periodontal parameters. Statistically significant difference between groups was found in CRP levels increase 24-h after the treatment, with the FM-SRP group presenting remarkably higher values ($p < 0.05$). Mean BP values showed a significant decrease 3-months after the treatment. Multivariate regression model revealed Pre/Diabetes; Group; Age; Smoking are predictive factors for SBP 3-months after treatment in hypertensive patients.

Conclusions: FM-SRP determines a robust postoperative acute systemic inflammation which significantly impacts the SBP change after periodontal treatment.

RCT FOR THE TREATMENT OF SINGLE RECESSIONS WITH INTERDENTAL ATTACHMENT LOSS (RT2): 10-YEAR FOLLOW-UP

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Aim: the aim of the present randomized controlled trial was to assess root coverage outcomes 10 years after Connective Tissue Graft (CTG) plus Coronally Advanced Flap (CAF) or CAF alone at single RT2 single maxillary gingival recession

Methods: twenty-one of the original 29 patients, 11 treated with CAF + CTG and 10 with CAF, were available at the 10-year follow-up. Measurements were performed by blind and calibrated examiners. 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 64% of test group and 20% of the control group after 10 years, with a significant difference favoring the CAF + CTG ($p = 0.030$). Furthermore, add of CTG was associated with higher KT gain ($p = 0.0002$) and higher papilla tip recession ($p = 0.023$) than CAF at the last follow-up. No differences were detected in terms of RecRed, RES and patient satisfaction.

Conclusions: add of CTG under CAF improved the probability to maintain complete root coverage 10 years after the treatment of single maxillary RT2 recession.

SURGICAL TREATMENT OF CLASS II FURCATION DEFECTS: ARE THERE NEW REGENERATIVE TECHNIQUES?

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Aim: complex anatomical features and limited accessibility to the furcation area make the periodontal management of multi-rooted teeth challenging. The aim of this study is to investigate a new surgical approach in periodontal regeneration of class II furcation defects.

Methods: 20 subjects diagnosed with a stage III grade B periodontitis with class II furcation defects, homogenous for defect and furcation anatomical characteristics, were selected. The test group (n = 10) underwent a new surgical approach, consisting in Piezosurgical Roof Furcation Contouring (PRFC), grafting and Coronally Advanced Flap (CAF). The control group (n = 10) was treated with Open Flap Debridement (OFD). Clinical and radiologic variables, such as bleeding on probing (BoP), probing depth (PPD), vertical and horizontal bone level, gingival recession, root trunk length, radicular separation, and furcation perimeter, were evaluated at baseline, 180 days and 1 year after surgery (FU).

Results: in the test group a CAL gain (6.00 ± 1.15 vs 3.00 ± 0.66 mm), horizontal probing attachment level gain (6.00 ± 1.56 vs 3.10 ± 0.73 mm) and PPD reduction (4.20 ± 0.92 vs 2.70 ± 0.48 mm) were observed, comparing baseline to FU data. Test group showed greater radiographic reduction of furcation perimeter (5.42 ± 1.38 vs 2.67 ± 0.98 mm).

Conclusions: this new surgical technique has shown greater clinical improvement at FU compared to the baseline. Regenerative surgery carried out with PRFC and CAF led to better clinical outcome compared to the control group, with better closure and healing of the class II furcation defects.

EFFICACY OF A NUTRACEUTICAL AGENT AS A COADJUVANT IN NON-SURGICAL PERIODONTAL THERAPY

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Aim: growing evidence suggests to nutraceutical agents being effective in the treatment of chronic inflammatory diseases. In this context, the efficacy of a new nutraceutical agent, with Bromelain, Baicalin, and Palmitoylethanolamide (PEA), as a coadjuvant to scaling and rootplaning (SRP) versus SRP alone in the treatment of periodontitis was evaluated.

Methods: 66 patients diagnosed with moderate periodontitis were enrolled in the randomized clinical trial and divided into two groups: test group, SRP + nutraceutical, and control group, SRP alone. In each patient, periodontal clinical parameters (PD, BOP, CAL, GR, and PI), inflammatory mediators in the crevicular fluid (GCF) and the visual analogue scale (VAS) were compared at baseline and after 15, 30, 60 and 180 days.

Results: both treatments demonstrated an improvement in periodontal parameters compared with baseline. After 6 months of treatment, compared with the control group, the test group determined a significant probing depth (PD) ($p = 0.003$) and BOP reduction ($p < 0.001$), while CAL gain was significantly obtained at 30 and 60 days after treatment ($p < 0.05$). In the test group, the level of inflammatory mediators was significantly reduced compared with the control group ($p < 0.05$). In the test group, a significant influence on VAS at 6, 12, 24, and 48 h after treatment ($p < 0.05$).

Conclusions: the nutraceutical agent, when combined with SRP, was shown to be effective in reducing periodontal parameters and controlling the levels of inflammatory mediators and pain in patients with periodontitis.

EVALUATION OF EFFICACY OF A LIPO-CURCUMIN-GEL AS AN ADJUNCT TO SRP

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Aim: curcumin is a naturally occurring anti-inflammatory agent with various biologic and medicinal properties. The aim of the present study was to evaluate the efficacy of the adjunctive use of a lipo-curcumin-gel with SRP as compared with SRP alone in the treatment of chronic periodontitis.

Methods: 23 patients, aged 30 to 60, affected by periodontitis, stage3 gradeA, participated in the study. In each patient 3 sites per tooth were selected. 276 sites were examined, and they were divided into 4 groups: SRP+LipoCurcuminGel; SRP+LipoGel; SRP+WhiteGel; SRP. Full mouth SRP was performed followed by the application of the experimental gel at each single site. The experimental sites were randomly assigned to each group, and then the experimental gel was applied by the same expert clinician who did SRP. After gel application, the site was sealed by cyanoacrylate (histoacryl). Assessment of FMBS, PPD, REC and CALs were done at baseline and 12 weeks after treatment.

Results: the results showed a significant greater reduction in all parameters in test sites following SRP and LipoCurcuminGel application, when compared with SRP alone in control group.

Conclusions: the local application of curcumin in conjunction with SRP is able to significantly improve all periodontal health parameters with beneficial effect in patients with chronic periodontitis.

USE OF ENDOSCOPY IN THE SUBGINGIVAL INSTRUMENTATION TRAINING OF DENTAL HYGIENE STUDENTS

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Aim: the difficult access to the submarginal area is one of the main limitations for an effective non-surgical periodontal therapy. The periodontal endoscope represents an innovative opportunity for a direct visualization of this area. Its use offers a self-assessment by the clinician, who can potentially improve the technical ability. This pilot study aimed to evaluate if an endoscopic self-assessment could boost the instrumentation quality of dental hygiene students.

Methods: study and control group were both formed by a "trained operator", attending the third and final year of course, and an "untrained operator", attending the second year. Participants worked with standardized ultrasonic tip (model, power, irrigation) on commercial jaw models with periodontal disease (Typodont®). Elements #41 and #47 with submarginal standardized root deposits were treated and examined. Only for the study group, the initial instrumentation (T0) was followed by a self-assessment through periodontal endoscope (DV2 DentalView®). A second instrumentation (T1) was then performed. At the end of both instrumentations, the submarginal residual deposits were analyzed by means of a specific software (ImageJ®). The effect of group, operator and tooth on root deposits were statistically evaluated.

Results: the amount of residual deposits decreased between T0 and T1 for all study group members (mean -8,58%). Tooth #41 showed a stronger decrease than #47 ($p = 0.01$). Increase of instrumentation effectiveness of the most apical areas was significantly associated to the endoscopic self-assessment ($p = 0.04$).

Conclusions: the use of a periodontal endoscope during non-surgical periodontal training seams to enhance the students' performance. Further analyses are strongly required.

ASSOCIATION BETWEEN CHRONIC KIDNEY DISEASE AND PERIODONTITIS. A SYSTEMATIC REVIEW AND METANALYSIS

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Aim: aims of this SR were to assess the association of Periodontitis (PD) with Chronic Kidney Disease (CKD) and with different CKD stages.

Methods: a protocol was designed according to the PRISMA Statement guidelines. Electronic searches were performed on Medline, Cochrane Central Register of Trials and Embase, up to April 4th 2021. RCTs, prospective and retrospective cohort studies, case-control studies and cross-sectional studies were considered. JBI's Critical Appraisal Tool for risk of bias assessment was used. The risk of PD was calculated using the Mantel–Haenszel odds ratios (MH-OR). Weighted mean difference for clinical attachment level (CAL) and periodontal probing depth (PPD) were also evaluated. The five GRADE considerations were used to assess the certainty of the body of evidence.

Results: out of 1949 titles screened, 142 full-texts were evaluated and 17 studies were included. Among them, 9 were at high risk of bias while for 8 studies the risk of bias was unclear. CKD was associated to higher risk of PD (MH-OR = 2.36, [95% C.I. 1.25, 4.44]; p = 0.008), higher mean CAL (WMD = 0.41 mm [95% C.I. 0.22, 0.60]; p < 0.0001) and mean PPD (WMD = 0.25 mm [95% C.I. 0.03, 0.47]; p = 0.02) compared to healthy individuals. Severe CKD patients (stages 4-5 vs 2-3) resulted at higher risk of PD (MH-OR = 2.21, [95% C.I. 1.07, 4.54]; p = 0.03). The overall strength of evidence was low due to study limitations and heterogeneity, even if a low heterogeneity was found concerning the studies comparing patients with different CKD stages.

Conclusions: an association between PD and CKD was found, so it could be appropriate to consider PD as a possible CKD comorbidity. Further studies are needed to better understand especially the effects of periodontal therapy on kidney function in CKD patients.

ALVEOLAR SOCKET PRESERVATION: BIOMATERIAL DEPLOYED

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Aim: the purpose of the study is to discuss the techniques of alveolar socket preservation and biomaterials of possible use.

Methods: an online search was conducted in two databases (PubMed, Cochrane library) for articles from the last 10 years using socket preservation biomaterials as keywords. The summary focuses on the description of biomaterials used and techniques employed.

Results: socket preservation is a procedure that reduces bone and soft tissue loss after tooth extraction. It is performed immediately after tooth extraction and is indicated in cases where it is not possible to place a post-extraction implant, when primary stability cannot be achieved or in adolescent patients. In literature the evidence is that with socket preservation we need 4 months for a predictable healing, usually before an implant surgery. The basic technique involves inserting biomaterial within the alveolar site that may or may not be covered by a membrane or graft.

Biomaterials: Autograft; Allograft; Xenograft; Alloplast; Hydroxyapatite (HA); Tricalcium phosphate (TCP); Bioactive glass; Dicalcium phosphates (DCP); Calcium polyphosphate (CPP); Calcium sulphate.

Conclusions: to date, there is still no technique that univocally guarantees success more than others. What is certain, is that the different socket preservation techniques are indeed able to limit horizontal and vertical resorption.

NON-SURGICAL PERIODONTAL THERAPY: USE OF ERYTHRITOL AND GLICINE

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Aim: accumulation of bacterial deposits on teeth is the primary cause of periodontitis. Bacterial deposits can be removed by "air-polishing". The purpose is to evaluate the effectiveness of repeated air-polishing with glycine powder or with a new erythritol powder during maintenance therapy.

Methods: the original material used in air polishing was sodium bicarbonate which could cause severe gingival erosion and substantial root damage. Contrarily, the more recent glycine has shown immunomodulatory, anti-inflammatory and cytoprotective effects on periodontal tissues, which makes it an excellent material for periodontal air polishing. Erythritol containing 0.3% chlorhexidine can also be used instead of glycine powder. This newly introduced powder has a finer grain size and might be even more tissue friendly than glycine. Erythritol, a sugar alcohol (polyol), is a non-toxic, chemically neutral and water-soluble agent that is used as a food additive.

Results: no signs of inflammation, complications or allergic reactions in form of swellings or redness of the surrounding soft tissues has been reported.

Conclusions: supra- and sub-mucosal debridement was accomplished using glycine and erythritol powder, which turned out to be less abrasive to soft tissues than sodium bicarbonate. It must be emphasized that air polishing wasn't associated with any collateral effects (e.g. emphysema formation), thus demonstrating clinical safety for debridement in mucositis and peri-implantitis sites.

COMPARISON BETWEEN BIOMATERIALS WITH OR WITHOUT BARRIERS IN FURCATION REGENERATION

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Aim: the aim of the study was to compare the application of biomaterials with or without barriers in furcation defects and to evaluate the reduction of furcation involvement using Hamp classification. In addition, a comparison between bioresorbable and nonresorbable barriers was conducted.

Methods: a literature review was performed using PubMed, Cochrane Database, Embase and Scopus. 23 randomized controlled trials were selected: a total of 774 class II furcation defects were treated in 761 patients. 202 defects were treated with biomaterial without barrier. 108 defects were treated with biomaterial with barrier (bioresorbable or nonresorbable). An evaluation of the furcation involvement was carried out after 6 or 12 months. In addition, a statistical analysis comparing the use of bioresorbable versus nonresorbable barriers was performed.

Results: the statistical analysis showed that the improvement from Class II to Class 0 was as follows:

- biomaterial without barrier at 6 months: 66.11% of cases;
- at 12-month: 78.57% of cases;
- biomaterial with barrier at 6 months: 60% of cases;
- at 12 months: 90% of cases.

As regards the membranes, better results were reached using resorbable membranes.

Conclusions: the best outcomes, in terms of reducing the furcation involvement, are those related to the use of barriers. In addition, the more predictable results are achieved when resorbable membranes are used.

THE EFFECT OF KERATINIZED MUCOSA ON PERI-IMPLANT HEALTH AND PATIENT-REPORTED OUTCOMES

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Aim: the aim of this systematic review was to analyze the effect of keratinized mucosa (KM) on different peri-implant health-related parameters and on patient-reported outcome measures (PROMs).

Methods: randomized controlled trials, cohort, cross-sectional and case-control human studies with a follow-up period of at least 6 months comparing two groups of patients with KM < 2 mm or ≥ 2 mm were included. Primary outcomes were implant failures, PROMs and bleeding (BoP/mBI). Additional outcomes were PPD, plaque accumulation (mPI/PI), gingival inflammation (GI/mGI), marginal bone loss (MBL), soft tissue recession (REC) and biological complications.

Results: fifteen studies were included (one RCT, two cohort prospective and twelve cross-sectional). Results reported no evidence of any statistical significant difference between groups in PPD, BoP and MBL, while a statistical significant difference in GI/BI, PI and REC was present in favor of the group with KW ≥ 2 mm. A consistent trend toward worst pain/discomfort during brushing in KM < 2 mm was observed.

Conclusions: no clear evidence was found supporting the role of KM on peri-implant health and PROMs, even if more plaque and marginal inflammation were present in the KM < 2 mm group.

ALTERNATIVE APPROACH TO TREATMENT OF PERIODONTAL DISEASE: PROBIOTICS AND NUTRACEUTICALS

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Aim: considering that antibiotics and antimycotics are used with the causal approach, which can result in the reduction of both the microorganisms that caused the infection and the beneficial ones, the scientific world is moving towards an alternative approach to periodontal disease treatment, introducing probiotics (living microorganisms that when taken correctly have beneficial effects on human health, including oral health, allowing the reduction of halitosis, candidiasis, caries, gingivitis and periodontitis) and nutraceuticals (healing nutrients taken through food) as adjuvant therapy and prevention.

Methods: the method used to reach this conclusion was the review of several studies reported in different scientific database (PubMed via Medline, Scopus, Embase, Cochrane, LILACS), through which it was shown that the use of probiotics and nutraceuticals, in addition to conventional not surgical therapy (SRP), is useful for the prevention and treatment of periodontal disease.

Results: the innovation is in the fact that these are active microorganisms that are competing in the creation of a microbiome promoting oral health, regardless of the genetics of the individual, permitting a reduction in the use of antibiotic therapy or surgery.

Conclusions: nutraceuticals and probiotics cannot currently fully replace causal therapy, although they have been shown to have beneficial effects on the patient, as there is a gap in studies to verify the direct effects of nutritional supplements on periodontal disease outcomes.

SOFT TISSUE CHANGES AFTER TISSUE GRAFT PLACEMENT IN IMPLANT SITES: A DIGITAL EVALUATION

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Aim: soft tissues around implant are a key point to the long term success of the implant therapy. The present study aimed at evaluating the amount of buccal gingil thickness after the execution of a bilaminar technique around implants using the one-abutment-one-time concept.

Methods: a total of 10 patients received an implant in edentulous zone. Two STL files obtained with intraoral scanner were matched and the buccal gingival thickness around the implant site was evaluated. First of them was taken before the surgical phases. Then implant was placed and a definitive abutment (Connect, MIS, Israel) was connected. Afterwards, a connective tissue graft was taken from the palate, sutured on the implant site and covered with the flap. Implant was immediate loaded with a provisional crown. A second intraoral scan was taken after 6 months, before the realization of the definitive crown. Digital analysis were made using a dedicated software (MSOFT, MIS implant technology, Israel). Measures were taken at the level of the implant neck, 1,5mm coronal and 3mm coronal.

Results: the mean difference in thickness (ΔT), evaluated at the center of the implant, was 0.42mm measured at the level of the implant neck, 0.99mm and 1,83mm respectively measured at 1,5mm and 3mm coronal to the implant neck.

Conclusions: combination between connective tissue graft and a definitive abutment, both placed at the same time of the implant, seemed to have a good amount of gingival thickness augmentation. The increasing of gingival thickness was a key factor for a biomimetic approach, in order to minimize and compensate the physiological decrease of bone volume due to the tooth loss.

VERTICALLY AND CORONALLY ADVANCED FLAP *VS* LATERALLY CLOSED TUNNEL IN THE LOWER INCISORS

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Aim: the comparison between two surgical techniques in the treatment of single lower incisors recessions is assessed analyzing both primary outcome (percentage of radicular coverage) and secondary outcomes (soft tissue thickness, keratinized tissue height, PPD, CAL, PI, increase of vestibular depth, professional aesthetic rate, patient satisfaction regarding aesthetic and post-operative discomfort).

Methods: a multicenter non randomized controlled trial is carried out analyzing the efficacy of the two surgical techniques; 40 patients are included, 20 treated in Bern by Professor A. Sculean with LCT technique, 20 treated in Bologna by Professor G. Zucchelli with V-CAF technique. The patients and their outcomes are evaluated at 7-14-30-90-180-270-365 days and a self-assessment survey is submitted at 7 and 365 days.

Results: by now, only 5 patients were included, 3 of them treated at the University of Bologna and 2 of them treated at the University of Bern; they still don't have a complete follow-up of 365 days and they will be evaluated over time.

Conclusions: preliminary data are not conclusive and further studying needs to be performed in order to obtain statistical relevance.

ECTODERMAL DYSPLASIA AND PERIODONTIUM: A FIRST ATTEMPT TO IDENTIFY TYPICAL FEATURES

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Aim: Ectodermal Dysplasia (ED) represents a vast and heterogeneous group of rare genetic disorders inducing anomalous development of two or more structures of ectodermal origin. No description of the periodontal anatomy in ED-affected people is reported in the literature. This study aims to clinically analyze periodontal anatomy in young adults affected by ED.

Methods: dental and periodontal parameters (plaque index, gingival index, probing depth, bleeding on probing, and tooth mobility) were collected on 11 individuals affected by ED. After that, all subjects underwent a session of professional oral hygiene, which included specific motivational instructions. The biometric parameters were re-evaluated after 7-10 days, and standardized analysis of the periodontal phenotype thickness was carried out using specific chromatic probes (Colorvue® Biotype Probes, HuFriedy).

Results: all biometric parameters underwent a statistically significant improvement, functional to the following periodontal analysis. A strong prevalence of thin phenotype was recorded: 105 sites out of the 114 examined. A peculiar feature of the keratinized tissue was identified, a very smooth surface with vessels in transparency and particular laxity of the gingival margin are just some of the observed characteristics.

Conclusions: based on the etiopathogenesis of ED and therefore of the embryogenetic process of oral tissues, the results obtained seem to confirm a characteristic feature of the periodontal complex. Future investigations supported by specific histological considerations are strongly recommended.

MINIMALLY INVASIVE APPROACH FOR THE TREATMENT OF DEEP INFRABONY DEFECTS

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Aim: the aim of the present study is to describe through a case series an approach to non-surgical therapy that combines the use of ultrasound with local antibiotics in the presence of deep infrabony defects in the aesthetic area, eliminating bleeding on probing and minimizing recession increase, thus proceeding with regenerative periodontal surgery.

Methods: ten patients diagnosed with periodontitis were included in the study, with at least one interproximal site in the aesthetic area characterized by a PPD value > 5 mm and presence of BOP+ associated with a defect with radiographic infrabony component > 3 mm. A series of measurements were performed at baseline and at three months, including full mouth plaque score, full mouth bleeding score, PPD, REC, CAL, and BOP. Periodontal non-surgical therapy was performed except at the infrabony defect site, where the following ultrasonic tips were used incrementally: tip A up to 4 mm subgingival, tip P up to 7 mm, tip PS up to 11 mm. Hence, a 14% doxycycline-based antibiotic delivered by a controlled-release biodegradable carrier was applied locally. The treated subjects were then recalled monthly for the first three months in order to perform a supra-gingival plaque control and to verify oral hygiene compliance before proceeding with regenerative surgical therapy.

Results: in all patients an improvement in PPD value was observed in the absence of REC increase; BOP value was negative, indicating suitability for regenerative periodontal surgery.

Conclusions: non-surgical therapy with a minimally invasive approach, using incremental ultrasonic tips associated with a local 14% doxycycline antibiotic, appears to be able to reduce parameters of inflammation such as PPD and BOP, without leading to increased recession, in order to perform regenerative surgery that is predictable.