

TOOTH FRAGMENT REATTACHMENT IN DENTAL FRACTURE, WITH ACCESS FLAP AND ADHESIVE TECHNIQUE: CASE REPORT

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Aim: crown-root fractures in the incisors may come to the attention of the clinician following trauma. These fractures can involve enamel, dentin and cementum, and depending on their depth, expose the pulp or leave it intact. These traumatic injuries compromise both the function and aesthetics of the teeth. When the fractured segment is available and closely approximates the remaining tooth, reattachment of the tooth fragment is a conservative and effective technique.

Methods: the case described concerns a patient with a subgingival crown-root fracture of the left lower central incisor, with a free tooth fragment stabilized by soft tissue, involving

the periodontal biological space. The element was treated by reattaching the fragment with adhesive technique, using a composite resin. The bonding procedure required the opening of a flap to facilitate rubber dam isolation.

Results: tooth fragment reattachment in a crown-root fracture is conservative, economical and has resulted in a long-lasting aesthetic outcome and improved function.

Conclusions: when the fracture extends in depth reaching the subgingival level, the treatment of crown-root fractures must combine both restorative requirements and the preservation of the healthy periodontium.

RECURRENCE OF PERIODONTAL DISEASE: NEED FOR RE-TREATMENT IN STAGE III, GRADE C, GENERALIZED PERIODONTITIS PATIENT - A CASE REPORT

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Aim: to report the treatment of a recurrent generalized stage 3 grade C periodontitis in a young woman.

Methods: the patient was treated 5 years before and enrolled in a SPT program. Following a decrease in compliance over the last 1.5 years, she experienced gum retraction and bleeding. Our visit showed high FMBS, FMPS, increased PPD and horizontal bone loss with infra-bony defects. She also reported smoking up to 5 cig/die.

Step 1 and a quadrant-wise Step 2 were performed, with monthly visits for OHI reinforcement. The ideal treatment goals were PPD ≤ 4 mm, FMPS $\leq 20\%$ and FMBS $\leq 10\%$. A crucial aspect was restoring the patient's motivation.

At the 4 months re-evaluation, despite the patient's compliance, initial goals weren't reached. Thus, subgingival re-instrumentation

in 1 a week period with the adjunction of antibiotics (AMX + MTZ for 14 days) was delivered. After 6 months residual pockets were treated by means of Access Flap (MWF) in III sextant, Access Flap (SFA) using polynucleotides in II sextant, Reg. Surgery (SFA) using DBBM + EMD in IV sextant. The patient was then enrolled in an SPT program, with a visit every 2 months.

Results: after 2.5 years of therapy periodontal indexes improved to 5% FMBS, 8% FMPS, and absence of PPD ≥ 5 mm, tooth hypermobility or suppuration. Only 3 surgeries were performed, and no tooth extraction was needed.

Conclusions: the step-wise approach was effective in treating this patient. The elements in the I sextant, with great CAL loss, remain the most critical. Prognosis improved on tooth and patient level, achieving initial goals.

NECROTIZING GINGIVITIS IN YOUNG FEMALE PATIENT SMOKER: A CASE REPORT

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Aim: this case report aims to detail the diagnosis and treatment of Necrotizing Gingivitis through the evaluation of a clinical case involving a young patient smoker and suffering from work related stress.

Methods: a 34-year-old woman reported with chief complaints of gingival bleeding during toothbrushing, spontaneous pain, loss of masticatory ability and generalized burning. The anamnesis was positive for Necrotizing Gingivitis (according to the new 2017 classification of periodontal diseases). After the initial examination, the patient was treated with a Van Winkelhoff protocol drug combined with non-surgical periodontal therapy performed with periodontal scaling. After active therapy was completed, a periodontal maintenance regimen was established.

Results: the antibiotic therapy combined with periodontal physical therapy produced excellent results and led to a complete healing of the patient. Follow-up occurred weekly throughout treatment, monthly for the first 6 months posttreatment. Clinical results after 10 years showed that this approach controlled the acute phase and maintained the patient's periodontal health over time.

Conclusions: the clinical case reported showed great curiosity given the very low percentage of diagnosis of NG in the world population. The only unknowns related to the patient lies in the fact that her oral hygiene levels do not conform to what is required by the clinician and could therefore lead to cases of relapse of the pathological condition.

NON-SURGICAL MANAGEMENT BY Nd:YAG LASER OF GINGIVAL OVERGROWTH: REPORT OF A CASE

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Aim: the Laser Assisted New Attachment Procedure (LANAP), utilizing the advanced properties of the Nd:YAG laser, represents a paradigm shift in periodontal therapy - moving from traditional resective approaches toward regenerative and reconstructive modalities. This case report aims to illustrate the clinical application of the Nd:YAG laser (1064 nm) as an adjunct to full-mouth disinfection in the treatment of drug-induced gingival overgrowth.

Methods: a 50-year-old male patient presented with gingival enlargement associated with amlodipine therapy. A comprehensive periodontal assessment, including radiographic imaging and full periodontal charting, was conducted. Following substitution of the calcium channel blocker, the patient underwent one month of nonsurgical therapy including supragingival and subgingival scaling and root planing, tailored oral hy-

giene instructions, and twice-daily rinses with 0.20% chlorhexidine. Subsequently, two sessions of Nd:YAG laser-assisted curettage were performed at 15-day intervals.

Results: progressive resolution of the gingival enlargement was observed over time, culminating in the restoration of a healthy, normotrophic gingival phenotype with absence of bleeding and clinical signs of inflammation.

Conclusions: the use of Nd:YAG laser fiber optics within gingival pseudopockets effectively disrupts periodontopathogenic biofilms and facilitates sulcular debridement. This approach shows encouraging short-term clinical outcomes in cases of drug-induced gingival overgrowth. While not a substitute for conventional root planing, it serves as a valuable adjunct that may reduce the need for invasive resective surgery.

SURGICAL EXTRUSION AS A THERAPEUTIC OPTION: A CASE SERIES ON SEVERELY COMPROMISED TEETH

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Aim: surgical extrusion is a therapeutic approach indicated for the treatment of dental elements that are otherwise difficult to isolate and restore without invading the supracrestal tissue. The goal is the coronal repositioning of the remaining portion of the tooth to ensure an adequate amount of healthy tissue, allowing for a prosthetically valid reconstruction while preserving the alveolar bone and promoting a more natural dental alignment compared to more invasive techniques.

Methods: this case series involves three dental elements in the aesthetic zone (two maxillary premolars and one upper lat-

eral incisor) successfully treated through surgical extrusion. The procedure included syndesmotomy, atraumatic luxation, extrusion and splinting, followed by stabilization and restorative treatment.

Results: the follow-up revealed complete healing of the periodontal tissues in all cases, absence of mobility, and an optimal aesthetic and functional outcome.

Conclusions: this case series supports the effectiveness of surgical extrusion as a valid alternative to more invasive alternatives in severely compromised teeth.

USE OF A PERIODONTAL GEL IN NON-SURGICAL PERIODONTAL THERAPY: A CASE SERIES

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Aim: this study envisions to assess the efficacy of the adjunctive use of a gel with Postbiotics, Lactobacillus ferment, Zinco PCA, MicroRepair, Lactoferrin, *Aloe Barbadensis* Leaf Juice Powder, hyaluronic acid and plant extracts to non-surgical periodontal treatment.

Methods: 12 systematical healthy patients with periodontitis stage II and III were recruited after signing a consent form. A total of 726 sites with a pocket depth ≥ 4 mm were undergone to scaling and root planing with ultrasonic and manual instrumentation. Periodontal index, clinical attachment level, probing depths were recorded at base line and 8 weeks after NSPT. Immediately after NSPT all patients were instructed to pass the interdental brush with the gel in the interdental space and

with the finger on the gums. A questionnaire was administered to evaluate patients' satisfaction.

Results: after 8 weeks all patients treated show clinical improvements of all periodontal index with statistical significant changes. In particular the mean PD-reduction was $1,18 \pm 1,07$ ($P < 0,05$) a mean CAL gain was $1,08 \pm 1,13$. 11/91,7 reported no post-treatment sensitivity, and no tooth discoloration was observed in any case.

Conclusions: despite limitation the adjunctive use of Parodontgel represents a valid treatment strategy in addition to non-surgical periodontal therapy both for the effects on the improvement of clinical parameters and on the reduction of post-treatment discomfort.

ASSOCIATION BETWEEN TOOTH LOSS AND MYOCARDIAL INFARCTION: REVIEW OF CASE-CONTROL AND COHORT STUDIES

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Aim: many clinical research have been carried out to investigate the relationship between Myocardial Infarction (MI) and tooth loss. Most of them indicated that the missing teeth are maybe associated with an increased risk of MI. The aim of this meta-analysis was to critically assess the strength of the association between MI and tooth loss in case-control studies and cohort studies.

Methods: we searched the PubMed, Embase, and Web of Science databases in English. Observational and case-control studies evaluating the association between tooth loss and myocardial infarction were included. A random-effects meta-analysis was used to calculate risk estimates.

Results: of the 193 papers, 40 were selected for full-text reading; 8 articles were eligible for inclusion after reviewing

titles and abstracts and met the quality assessment. Tooth loss is the oral condition evaluated, while coronary artery disease myocardial infarction represents the major cardiovascular event. No association between missing teeth and cardiovascular disease (MI) has been observed in one study, while a potential link has been suggested by the remaining trials. Specifically, a statistically significant association with ≥ 10 tooth loss and the risk of the occurrence of ischemic event emerged in 4 studies.

Conclusions: it appears that tooth loss increases the risk of myocardial infarction, and as a result, oral health professionals could contribute to public health cardiovascular control efforts.

CONTROL OF ORAL COMPLICATIONS IN DIALYSED PATIENTS UNDERGOING PROFESSIONAL ORAL HYGIENE THERAPY: A COHORT STUDY (PRELIMINARY RESULTS)

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Aim: patients undergoing dialysis treatment show a high incidence of uremic stomatitis, xerostomia and opportunistic infections, which limit home oral hygiene. The aim of the study was to evaluate the impact of dialysis on oral health, through a dedicated clinical protocol aimed at improving patients' quality of life and reducing periodontal probing depth.

Methods: a cohort of 23 dialysis patients, without relevant comorbidities, each presenting at least two non-adjacent sites with PPD ≥ 5 mm, diagnosed by radiographic examination and periodontal chart, was created.

The protocol was divided into three sessions spaced three months apart: in the first one, radiographic and periodontal evaluations, motivation and instructions on home oral hy-

giene were carried out, followed by professional supra- and sub-gingival oral hygiene. The next two sessions included motivational reinforcement and further professional hygiene; in the last one, periodontal indices were also collected again.

Results: from the preliminary data on the 3 completed patients, we were able to detect significant improvements in periodontal parameters, greater adherence to home hygiene and improved comfort during professional and home procedures. A significant reduction in uremic stomatitis, xerostomia and oral infections was also observed.

Conclusions: the study is still ongoing, and the final results will be available at the end of the follow-up.

INNOVATION IN DIAGNOSTIC PERIODONTAL IMAGING: FULL-MOUTH RADIOGRAPHIC (FMX) VS CBCT IN THE EVALUATION OF CLINICAL ATTACHMENT LEVELS – AN *EX VIVO* CADAVERIC STUDY

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Aim: this study aims to compare conventional 2D full-mouth radiographs (FMX) and 3D CBCT in evaluating Clinical Attachment Levels (CAL) and periodontal bone defects, with the goal of improving diagnostic protocols in periodontology while considering radiation safety.

Methods: an *ex vivo* cadaveric model was used to acquire imaging data. CBCT scans were performed using three different protocols: low-dose (90 kV, 6.40 s, 6 mA), standard-dose (90 kV, 9.60 s, 6 mA), and high-quality (90 kV, 16.80 s, 8 mA) all with a 10 × 10 cm FOV. These were compared with a standard FMX acquired using photo-stimulable phosphor (PSP) plates (70 kV, 7 mA).

Two independent evaluators analyzed the CBCT datasets in two phases.

In phase one, the assessors qualitatively scored bone defect visibility across the CBCT protocols and compared the scans to evaluate volumetric consistency.

In phase two, radiation dose levels were analyzed and compared across all imaging modalities based on CTDIvol (Computed Tomography Dose Index Volume).

Results: the highest CTDIvol value was recorded for the high-quality CBCT protocol (5.53 mGy), followed by the standard-dose (1.93 mGy) and low-dose (1.39 mGy) protocols. No significant differences were observed in intra-operator assessments or in volumetric comparisons post-AI segmentation, indicating consistent diagnostic output. CBCT provided superior visualization and diagnostic information regarding bone morphology and periodontal defects compared to FMX, albeit with higher radiation exposure.

Conclusions: this study supports the use of low-dose CBCT as a viable alternative to conventional FMX in periodontal diagnosis. The findings demonstrate that optimized CBCT protocols can offer enhanced diagnostic accuracy with acceptable radiation exposure, suggesting a potential paradigm shift in periodontal imaging strategies.

PORPHYROMONAS GINGIVALIS VIRULENCE FACTORS IN ACTIVE PERIODONTAL POCKETS OF PATIENTS WITH STAGE III AND IV PERIODONTITIS AS AN INCREASED RISK FACTOR FOR THE ONSET OF AD: “THE GINGIPAINS”

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Aim: to isolate in active periodontal pockets of subject diagnosed with stage III and IV periodontitis *Porphyromonas gingivalis* and its virulence factor, the gingipains, to evaluate the systemic implication of chronic inflammation due to periodontitis.

Methods: a population of patients with stage III and IV periodontitis and active pockets, (PPD >4 mm and positive BOP) will undergo an odontostomatological examination, with periodontal chart compilation and evaluation of Probing Pocket Depth (PPD), Bleeding On Probing (BOP) and Periodontal Inflamed Surface Area (PISA). Then they will have a supra and subgingival plaque sample and a blood sample taken for microbiological and serological analysis of the presence of *P. gin-*

givalis and its virulence factors. A control group will consist of subjects without periodontitis, matched for age, sex and smoking habit, and they'll undergo the same evaluations.

Results: microbiological analysis of the plaque samples taken will be performed by culture on blood agar and subsequent PCR ELISA to confirm the presence of the bacterium and its virulence factor. Blood analysis will use mass spectrometry to confirm the systemic spread of gingipains.

Conclusions: based on prior research, results are expected to provide novel evidence regarding the association between periodontal disease and neurodegenerative disorders. This evidence will inform the development of more effective prevention strategies.

ADJUVANT IMPACT OF SODIUM DNA TO CHLORHEXIDINE ON PERIODONTAL BACTERIA

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Aim: Chlorhexidine (CHX) is widely utilized in the management of various periodontal conditions due to its well-documented antimicrobial properties, despite its notable side effects. To mitigate these adverse effects, this study aims to evaluate the potential adjuvant role of sodium DNA when combined with CHX, assessing its impact on *Streptococcus mutans* DSM 20523 and *Escherichia coli* ATCC 25922, representative strains of the oral microbiota, as well as on the soil-dwelling amoeba *Dictyostelium discoideum* (D.d.), used as a surrogate for phagocytic immune cells.

Methods: a cell culture model was employed to determine the Minimum Inhibitory Concentration (MIC), Minimum Bactericidal Concentration (MBC), and to perform time-kill assays for each mouthwash formulation against *S. mutans* and *E. coli*, following CLSI guidelines. In addition, a phagocytosis assay using *D. discoideum* was conducted to evaluate alterations in

its phagocytic function after exposure to the different CHX-based mouthwashes, with or without sodium DNA.

Results: all mouthwashes containing CHX, whether or not enriched with sodium DNA, exhibited bactericidal effects against *S. mutans*. Conversely, time-kill assays showed enhanced bactericidal activity against *E. coli* with CHX-based formulations lacking sodium DNA. The combination of 0.12% CHX with sodium DNA yielded the most favorable outcome in terms of *D. discoideum* viability and phagocytic performance.

Conclusions: the formulation containing 0.12% chlorhexidine supplemented with sodium DNA demonstrated the most effective antibacterial action against oral pathogens. Furthermore, the use of the *D. discoideum* model, which mimics the behavior of mammalian phagocytic cells, offered valuable insights into both the antimicrobial efficacy and the biocompatibility of the tested mouthwashes.

EXPLORING SALIVARY BIOMARKERS FOR EARLY DIAGNOSIS AND GUIDANCE FOR PERIODONTITIS TREATMENT

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Aim: to develop a non-invasive, simple method for the early and objective diagnosis of periodontitis (PRD) before the clinical loss of periodontal attachment.

Methods: periodontal assessments were conducted on 20 systemically healthy patients. Saliva samples were collected from 10 PRD-free patients (G1) and 10 patients with PRD (G2). The strength measures (STMs) of salivary matrix metalloproteinase-8 (MMP-8), major anti-inflammatory interleukins (IL-4 and IL-10), pro-inflammatory cytokines (IL-1 β , IL-8, and interferon α [IFN- α]), and the pleomorphic IL-6. Clinical and salivary assessments were performed at baseline (TP0) for both groups, and after periodontal treatment (TP1) only in G2.

Results: all the periodontal indices were significantly higher in G2-TP0, lower in G1, and intermediate in G2-TP1. MMP-8 fol-

lowed a similar pattern to the clinical indices, except for the significance of G1 vs G2-TP1. IL-8 STMs were significantly higher in G2-TP0, lower in G2-TP1, and intermediate in G1. IL-1 β and IL-4 ISTMs showed significant differences between G1 vs G2-TP0 and G2-TP0 vs G2-TP1, while IL-10 and IFN- α differed between G2-TP0 vs G2-TP1. The statistical analysis, aimed to compare the clinical and biomarkers trends in each individual patient by clustering, showed significant results for the cluster MMP-8, IL-1beta, IL-4, IL-8, IL-10.

Conclusions: the analysis of a cluster of biomarkers aligned with periodontal indices for characterizing PRD, its treatment, and periodontal health seems to be a promising approach for achieving objective, early diagnosis and monitoring of PRD.

EMERGING APPLICATIONS OF DIGITAL TECHNOLOGIES FOR PERIODONTAL PROGNOSIS IN THE DENTAL SETTING: A SYSTEMATIC REVIEW

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Aim: to review digital technologies (including artificial intelligence, AI) for periodontal prognosis in the dental setting, focusing on accuracy metrics.

Methods: a systematic literature search was conducted on three databases. Longitudinal clinical trials conducted on patients who received a prognostic assessment and were enrolled in a follow-up that measured tooth loss and/or periodontal attachment, were included. The intervention consisted of any type of prognostic assessment generated by digital technologies based on AI models or other digital tools and applied in a dental setting for the prediction of a predefined label over a period of at least 6 months. The comparison consisted of any prognostic assessment alternative to the Intervention.

Results: eight studies at high risk of bias evaluating the prognostic performance of models generated by supervised Machine Learning (ML), were included. Data from single, comparative studies indicated that supervised ML can be used to generate prognostic models either (i) able to predict the patient periodontal status over a 5-year prediction period with a higher accuracy compared to validated, traditional risk assessment tools, or (ii) characterized by a better predictive performance than classical statistical models in predicting tooth loss in periodontitis patients.

Conclusions: supervised ML is a promising tool for the generation of prognostic models to be applied in the field of Periodontology. However, the current evidence is not sufficiently consistent and conclusive for clinical applicability and generalizability to practice.

IMPLICATIONS FOR DIAGNOSIS AND TREATMENT OF PERIODONTITIS IN PATIENTS WITH THYROID DISEASE

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Aim: this scoping review aims to explore the probable causal relationship between periodontitis and thyroid disease in terms of epidemiology, pathogenesis, and treatment.

Methods: the search strategy follows the PRISMA-ScR guidelines. PubMed, Scopus, Web of Science, and Cochrane databases were searched from January 2014 to January 2024 using the MeSH terms “periodontitis” and “thyroid.” A total of 153 initial records were identified, and 20 articles were selected for analysis and discussion.

Results: the review highlights a high prevalence of periodontitis among patients with thyroid disease, including thyroid cancer. The main contributing factors to this association are

genetic predisposition, alterations in the oral microbiome, and the role of proinflammatory cytokines. Additionally, periodontal treatment, particularly scaling and root planing, has been shown to improve thyroid parameters.

Conclusions: although the number of randomized controlled studies on this topic is limited, the findings of this review support a bidirectional relationship between periodontitis and thyroid disease.

Systemic inflammation appears to be the key link between these conditions, emphasizing the need for further research to better understand the underlying mechanisms and potential therapeutic approaches.

IMPACT OF INTENSIVE NONSURGICAL PERIODONTAL THERAPY ON SERUM CYTOKINE LEVELS: AN UPDATED SYSTEMATIC REVIEW AND META-ANALYSIS

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Aim: intensive Nonsurgical Periodontal Therapy (NSPT) may improve both periodontal and systemic health, but its effects on circulating early-phase cytokines namely TNF- α , IL-1 β , IL-6 and hs-CRP remain underexplored. This meta-analysis evaluates whether intensive vs standard NSPT improves inflammatory markers in individuals with periodontitis.

Methods: a systematic search was performed to identify interventional studies published until December 2023. Risk of bias was assessed using Newcastle-Ottawa scale or Cochrane RoB 2.0 as appropriate. Standardized Mean Differences (SMD) and 95% Confidence Intervals (CI) for cytokines and hs-CRP/CRP levels. Meta-regressions for treatment elapsed time, subject age, publication year, remaining teeth and smoking status were conducted. Statistical significance was set at $P < 0.05$.

Results: among 1160 screened study 50 meet the inclusion/exclusion criteria. Intensive NSPT significantly reduced TNF- α (SMD -0.30 95% CI -0.40 to -0.20, $p < 0.001$), IL-1 β (-0.53 95% CI -0.66 to -0.40, $p < 0.001$), IL-6 (-0.19 95% CI -0.27 to -0.11, $p < 0.001$), CRP (-0.16 95% CI -0.25 to -0.07, $p < 0.001$), and hs-CRP (-0.27 95% CI -0.36 to -0.19, $p < 0.001$). Random-effects analysis showed no significant CRP and IL-1 β reductions. NSPT was more effective in younger individuals (Slope: 0.097, $R^2 = 37.7$, $P = 0.004$), while smokers exhibited a weaker response.

Conclusions: intensive NSPT effectively reduces systemic inflammation in periodontitis patients. Immunosenescence and smoking may impact outcomes, with potential implications for cardiovascular disease prevention, particularly in younger adults.

PERIODONTITIS-RELATED GUT MICROBIOME AND METABOLOME: A MULTI-OMICS ANALYSIS

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Aim: this longitudinal clinical study aims to explore the oral-gut microbiome and metabolome associated with periodontitis. It also prospectively evaluates the effects of periodontal treatment on their composition using an omics-based approach.

Methods: fecal samples were self-collected by patients with generalized stage III/IV periodontitis ($n = 25$), before and 3 months after step I and II of periodontal therapy. Age- and gender-matched periodontally healthy volunteers were recruited as controls ($n = 25$). Stool samples were analyzed with both shotgun sequencing metagenomic and nuclear magnetic resonance-based metabolomic techniques to identify periodontitis signature.

Results: gut microbial profiles of periodontitis patients before treatment significantly differed from healthy controls, display-

ing a higher abundance of specific oral bacteria such as *S. oralis*, *E. nodatum*, *P. stomatis*, *Actinomyces*, *Leptotrichia* and *Prevotella oral spp.* Furthermore, periodontal therapy generated significant change in gut microbiota, leading to post-treatment features similar to those of healthy participants. Consistently, a noticeable difference in fecal metabolites was observed between periodontitis patients, both pre- and post-treatment, and healthy subjects. The latter expressed more health-associated metabolites such as acetate, propionate, and butyrate.

Conclusions: collectively, distinctive genomic, functional, and metabolic gut signatures of periodontitis were identified, suggesting an oral-gut translocation of specific oral bacteria in subjects with uncontrolled disease.

IMPACT OF A PROBIOTIC MOUTHWASH IN CONTROLLING GINGIVITIS IN PATIENTS WITH FIXED ORTHODONTIC APPLIANCES: RCT

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Aim: the study analyzed the effectiveness of a probiotic mouthwash containing Lactobacillus Lysate, Zinc, PCA, and MicroRepair in preventing gingivitis and reducing plaque accumulation in patients with fixed orthodontic appliances. Orthodontic appliances can hinder proper oral hygiene, increasing the risk of plaque buildup and gum inflammation. The hypothesis of the study was that using probiotic mouthwash, combined with mechanical tooth cleaning, could improve gum health in orthodontic patients.

Methods: the study involved 50 patients, aged between 12 and 20 years, undergoing fixed orthodontic treatment. The patients were divided into two groups: the test group used probiotic mouthwash containing Lactobacillus Lysate, Zinc, PCA, and MicroRepair, while the control group followed a standard oral hygiene treatment without mouthwash. The effectiveness

of the treatment was evaluated by measuring dental plaque accumulation and gum bleeding before, during, and after the treatment.

Results: the results showed significant improvements in the test group. Specifically, a 29.9% reduction in dental plaque accumulation and a decrease in gum bleeding were observed. In contrast, the control group showed a much more modest reduction in the evaluated parameters.

Conclusions: the use of probiotic mouthwashes proved to be a useful complement to traditional oral hygiene for orthodontic patients. The combination of mechanical tooth cleaning and probiotic mouthwash led to a significant reduction in gum inflammation and plaque, helping to prevent gingivitis. However, further research is needed to fully understand the long-term effectiveness of these treatments and confirm their utility in daily clinical practice.

EFFICACY OF HYDROXYAPATITE - ASSISTED CAVITATION THERAPY IN PERIODONTAL SUPPORTIVE TREATMENT: PRELIMINARY RESULT

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Aim: this randomized clinical trial assesses the efficacy of water-borne hydroxyapatite applied through a pain-free device with a cavitation effect in periodontal supportive therapy. The aim of this study are the change of Probing Pocket Depth (PPD) and the modification of dentin hypersensitivity, comparing traditional ultrasonic debridement to cavitation therapy with hydroxyapatite.

Methods: twenty-one systemically healthy patients with a history of periodontitis (stage III/IV, grade B/C) with at least four experimental sites with PPD ≥ 6 mm or PPD = 5 mm with Bleeding on Probing (BOP+) are randomly assigned in a split-mouth trial. The test sites receive traditional ultrasonic treatment (control group) or cavitation treatment with hydroxyapa-

tite (test group) with Vector Paro handpiece. Periodontal parameters are collected at baseline, 3 months and 6 months. Patient comfort and satisfaction are evaluated with a questionnaire.

Results: preliminary results show significant improvements in periodontal parameters at test sites, but no significant differences between groups. Regarding sensitivity, the patients prefer hydroxyapatite treatment in terms of pain reduction.

Conclusions: both treatments are efficacy in terms of reduction of PPD in test site, the treatment with hydroxyapatite can be a valid alternative to treat depth pocket especially for the delicate and reduction of sensitivity.

CROSS-LINKED VOLUME-STABLE COLLAGEN MATRIX *VERSUS* CONNECTIVE TISSUE GRAFT FOR SOFT TISSUE AUGMENTATION AT IMPLANT SITE: A MULTICENTER RANDOMIZED CONTROLLED CLINICAL TRIAL

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Aim: to compare the efficacy of a cross-linked Volume-stable Collagen Matrix (VCMX) *versus* Connective Tissue Graft (CTG) in terms of increase of buccal soft tissue thickness (GT) (Primary Outcome) around dental implants.

Methods: the present study is a parallel, randomized multi-center clinical trial, conducted according to the CONSORT statement. The clinical centers were four Italian Periodontal clinical centers.

Results: a total of 100 patients participated in the study, 50 in each group. GT increase was 1.0 ± 0.75 in the CTG group and 0.66 ± 0.58 mm in the VCMX group, while the increase in Kerati-

nized Tissue Width (KTW) was 0.89 ± 1.16 for CTG and 0.16 ± 1.1 for VCMX. CTG showed superior results than VCMX in terms of GT gain (0.37 mm, 95% CI: 0.13 – 0.61, $p = 0.002$) and KTW gain (0.79 mm, 95% CI: 0.37 – 1.22, $p < 0.0001$). In cases of Baseline GT ≥ 2 mm, CTG and VCMX yielded comparable results.

Conclusions: both techniques improved soft tissue conditions at implant site. CTG yielded better outcomes in terms of GT and KT height. VCMX was associated with shorter chair-time and less post-operative discomfort, but both procedures achieved excellent final patient satisfaction.

CLINICAL OUTCOMES AND ORAL HEALTH-RELATED QUALITY OF LIFE AFTER TWO DIFFERENT TIMINGS FOR PERIODONTAL RE-EVALUATION: A RANDOMIZED CONTROLLED CLINICAL TRIAL

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Aim: this study aimed to assess the impact of two different re-evaluation timings following subgingival instrumentation on clinical and patient-reported outcomes in patients with stage III/IV periodontitis.

Methods: forty participants were assigned to a 3-month (control) or 6-month (test) re-evaluation group. The primary outcome was the number of teeth with residual pockets. Secondary outcomes included changes in clinical parameters, pocket closure rates, and variations in oral health-related quality of life (OHIP-14) scores. Statistical analyses were conducted using ANOVA, ANCOVA, mixed-effects models and multilevel models.

Results: thirty-six patients completed the study. Patients in the control group had an average of 7.5 ± 3.6 teeth with residual pockets, while the test group had 7.6 ± 4.4 (difference: 0.1; 95% CI [-2.6 to 2.8]; $p = 0.9275$) with the difference being non statistically significant. Smokers's teeth were more prone to present residual pockets at the re-evaluation (OR 1.5) despite the result being non-significant ($p = 0.2837$). Molars had a 10.67 times higher risk of presenting with residual pockets compared to single-rooted teeth ($p < 0.0001$). OHIP-14 scores significantly improved in both groups.

Conclusions: re-evaluation at either 3 or 6 months led to comparable clinical and patient-reported outcomes. Smoking and molar sites negatively influenced treatment outcomes.

IMPACT OF NON-SURGICAL PERIODONTAL THERAPY (STEP 1 AND 2) ON TYPE 1 DIABETES MELLITUS PATIENTS: A MULTILEVEL ANALYSIS

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Aim: the purpose of this study is to explore the effect of non-surgical periodontal therapy in patients with Type 1 Diabetes Mellitus (T1DM) and periodontitis in terms of Periodontal Depth reduction (PDr) and Pocket Closure (PC).

Methods: patients suffering from T1DM already under treatment and affected by periodontitis were considered for the inclusion. Oral hygiene instructions were provided, and non-surgical periodontal treatment (step 1-2) was performed through a full-mouth approach. Patients were visited 1 week after the treatment and underwent a professional mechanical plaque removal at the 3- and 6-months visit. Periodontal indices were assessed at the baseline and 6 months after the therapy.

Results: the cohort consisted of 50 patients, 734 teeth and 1835 sites with moderate/deep pockets (Periodontal Probing

depth, PPD >4 or PPD = 4 mm with Bleeding on Probing (BoP)). Six months after non-surgical therapy, 69.26% sites were closed. Initial PPD ($p < 0.001$) and molar teeth ($p < 0.001$) were associated with a reduced probability to achieve PC. Mean PDr at 6 months was 1.21 ± 0.81 mm. Glycated hemoglobin, initial PPD, BoP and tooth being molar were significant and negatively affected PDr. When modelled together, only PPD and molar tooth resulted significant (both $p < 0.001$).

Conclusions: this study shows that non-surgical periodontal treatment is effective in PDr and improves the periodontal conditions of T1DM patients, though resulting in a lower PC probability compared to a general population. Moreover, specific local conditions may strongly impact the effectiveness of the treatment.

CLINICAL IMPACT OF PLATELET-RICH FIBRIN IN NON-SURGICAL PERIODONTAL TREATMENT: A SPLIT-MOUTH RANDOMIZED TRIAL

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Aim: this randomized controlled trial evaluated the efficacy of Platelet-Rich Fibrin (PRF) as an adjunct to Scaling and Root Planing (SRP) in non-surgical periodontal therapy, assessing its impact on pocket closure, attachment gain, and wound healing.

Methods: a split-mouth trial was conducted on 13 patients presenting with 26 periodontal pockets (5-6 mm). The test group received PRF after SRP, while the control group underwent SRP alone. Clinical parameters - including Probing Pocket Depth (PPD), Clinical Attachment Level (CAL), Gingival Recession (GR), Plaque Index (PI), and Gingivitis Index (GI) - were recorded at baseline and at six weeks. Wound healing was evaluated using a standardized index.

Results: the SRP+PRF group showed significantly improved outcomes. CAL gain was greater (2.69 ± 0.63 mm vs 4.15 ± 0.69 mm, $p = 0.001$), and PPD reduction was more pronounced (2.62 ± 0.65 mm vs 3.85 ± 0.80 mm, $p = 0.001$). Wound healing scores were superior, indicating enhanced tissue regeneration. Differences in GR were not statistically significant ($p = 0.21$), although a trend toward reduced morbidity was noted.

Conclusions: PRF appears to accelerate healing, enhance tissue stability, and facilitate pocket closure, potentially reducing the need for surgical intervention. It represents a promising biomaterial for improving periodontal outcomes. Larger studies with extended follow-up are warranted to confirm these findings.

MEDICAL COACHING VS TRADITIONAL EDUCATION FOR PERIODONTAL HEALTH IMPROVEMENT: A RANDOMIZED CONTROLLED PILOT STUDY

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Aim: this pilot randomized controlled trial aimed to evaluate the short-term effectiveness of Medical Coaching on Oral Health (MCOH) in improving plaque control and gingival health, as well as promoting healthier lifestyle behaviors among patients with periodontitis, compared to traditional Oral Hygiene Instructions (OHI).

Methods: sixty-four patients diagnosed with periodontitis were randomly assigned to either the MCOH group or a control group. Baseline assessments included the Plaque Control Record (PCR), Gingival Bleeding Index (GBI), and a structured lifestyle questionnaire. The intervention group received tailored MCOH sessions focused on goal setting, emotional barrier identification, and action planning, while the control group received standard OHI. Both groups were re-evaluated after four weeks.

Results: after one month, the MCOH group showed significantly greater reductions in GBI (-47.5 vs -24.5, $p < 0.001$) and PCR (-44.0 vs -32.0, $p = 0.003$) compared to controls. Additionally, 75% of the MCOH group achieved the composite outcome (PCR <30% and GBI <10%), versus 34.4% of the control group ($p = 0.001$). Improvements in lifestyle score were also significantly higher in the MCOH group (+2.00 vs +0.00, $p < 0.001$), especially in smoking, alcohol use, and stress management.

Conclusions: MCOH proved more effective than traditional methods in enhancing both oral health and lifestyle factors among patients with periodontitis. These findings support the integration of patient-centered coaching approaches in periodontal care and warrant further investigation with long-term follow-up.

EFFECT OF ANTIMICROBIAL GEL WITH POSTBIOTICS, LACTOFERRIN, ALOE BARBADENSIS LEAF JUICE POWDER AND SODIUM HYALURONATE ON PALATAL MUCOSA WOUND HEALING: A RANDOMIZED CLINICAL TRIAL

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Aim: the aim of the study is to investigate the clinical efficacy of a gel containing postbiotics, lactoferrin, *aloe barbadensis* leaf juice powder and sodium hyaluronate in the wound healing and post-surgical morbidity of the palatal donor area, following epithelial-connective tissue graft harvesting for root coverage procedures, around both teeth and implants.

Methods: thirteen healthy subjects were enrolled in a randomized, split-mouth, triple blind, clinical trial. For each subject, an epithelial-connective tissue graft was harvested from two specular areas of the palate. At the end of each surgical procedure and on day 1 and 3, one area was randomly assigned to receive the antimicrobial gel (test site) whereas the other re-

ceived a placebo (control site). At baseline, and at 1, 3, 7, 14, 21 and 30 days, the main criteria as the Colour Match (CM), Healing Index (HI), Secondary Healing Classification (SHC), Complete Epithelization (CE) were assessed.

Results: the test group showed statistically significant differences at day 7 for the CM (4.84 ± 0.80 vs 3.92 ± 0.95 , $p = 0.0088$) and at 14 for the HI (5.76 ± 0.59 vs 4.69 ± 1.49 , $p = 0.0254$). No statistically significant differences were observed at any time point for the other clinical parameters.

Conclusions: the topical application of the gel under study could help, during the initial post-operative days, the clinical wound healing.

EFFECT OF ENAMEL MATRIX DERIVATIVES ON BIOMARKERS RELATED TO TISSUE HEALING FOLLOWING THE FLAPLESS APPROACH: A RANDOMIZED CONTROLLED STUDY

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Aim: the application of growth factors and immunomodulatory agents in periodontal intrabony defects has shown promising biological and clinical outcomes for periodontal regeneration. However, there is a limited number of clinical studies exploring the potential role of Enamel Matrix Derivatives (EMD) in flapless regenerative procedures, and none have investigated the biological aspects of such treatments. The aim of this randomized controlled trial was to assess the adjunctive effect of EMD on the Gingival Crevicular Fluid (GCF) biomarker profile in deep intrabony defects treated with a flapless approach.

Methods: twenty-four patients diagnosed with Stage III/IV periodontitis were randomly assigned to receive either the test (flapless with EMD) or the control procedure (flapless alone) following the phase I/II of periodontal therapy. Periodontal parameters and GCF biomarker levels were assessed at baseline and 2 weeks after treatment. Biomarkers associated with epi-

thelial healing (Epithelial Growth Factor [EGF]), connective tissue remodeling/regeneration (Matrix Metalloproteinase (MMP)-8, Fibroblast Growth Factor [FGF]), and bone formation (Osteoprotegerin [OPG]) were quantified using a sensitive multiplex bead immunoassay.

Results: at baseline, both groups were comparable across all demographic, clinical, and biological parameters. At 2 weeks, the test group exhibited a significant reduction in EGF ($p < 0.01$) and MMP-8 ($p < 0.05$), while FGF and OPG levels were significantly increased (both $p < 0.05$) compared to baseline. In contrast, the control group showed a significant decrease in MMP-8 ($p < 0.01$).

Conclusions: these preliminary findings suggest that the adjunctive use of EMD in flapless treatment of intrabony defects may modulate the wound healing environment towards periodontal tissue regeneration.

STAGING AND GRADING OF PERIODONTITIS: SIX YEARS LATER

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Aim: in 2017, a new classification of Periodontal Diseases redefined diagnostic criteria, enabling a more accurate assessment of disease severity and progression through a system based on Staging and Grading. The purpose of this observational epidemiological study was dual: to evaluate knowledge of dentists and dental hygienists regarding the Classification and to assess the diagnostic reliability among examiners.

Methods: the questionnaire included a knowledge-based and a diagnostic section.

Each participant answered twice at separate times. A panel of periodontal experts formulated, according to the Classification, the diagnoses for 7 clinical cases to compare them with participants' answers. "Stage 5" and "Grade D" were included as distractors.

Results: a total of 109 participants (72 dentists and 37 dental hygienists) completed the study. The results showed a significant discrepancy between participants' answers and the experts' diagnoses. In fact, 63.89% of dentists and 51.35% of hygienists reported they are still using the outdated definitions of chronic and aggressive periodontitis. The success rate in responses was higher in the most evident cases, while it decreased in the other cases. Furthermore, in the most severe cases, a considerable number of responses contained "stage 5" and/or "grade D".

Conclusions: the results indicate that the current Classification is not yet easily applicable in clinical practice, making it difficult to achieve diagnostic uniformity. Additional communication and training efforts are crucial to ensure that oral practitioners fully master this tool.

FREE GINGIVAL GRAFT FOR PERIODONTAL SOFT TISSUE AUGMENTATION: A THREE YEAR CASE REPORT

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Aim: gingival recession is a common periodontal issue leading to root exposure, hypersensitivity, and compromised aesthetics. The case report aims to evaluate the effectiveness of Connective Tissue Grafting (CTG) in treating mandibular anterior gingival recession and improving soft tissue stability over time.

Methods: a patient presented with gingivitis and gingival recession due to inadequate keratinized tissue in the mandibular anterior region complaining spontaneous bleeding and swelling. After a careful anamnesis and intraoral exam, a muco-gingival surgery procedure was scheduled. A free gingival graft was harvested from the palatal donor site and sutured into the prepared receiving site to increase gingival thickness. A series of follow-ups were scheduled at: 7 days; 1 months, 6 months, 1 year and 3 years.

Results: postoperative healing showed successful graft integration with increased gingival thickness and keratinized tissue formation. The patient also underwent orthodontic treatment and Long-term follow-up confirmed stable soft tissue augmentation, and functional adaptation although an antiaesthetic negative blending is evidenced. The treatment effectively reduced recession depth and improved periodontal health.

Conclusions: connective tissue grafting is a reliable and predictable technique for managing the lack of keratinized tissue. This case demonstrates its long-term effectiveness in enhancing periodontal soft tissue health and patient comfort. Muco-gingival surgery with CTG remains a valid therapy for soft tissue augmentation.

PLATE INDEX CHANGES AND BLEEDING IN A PATIENT WITH TYPE II DIABETES DURING PERIODONTAL DISEASE

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Aim: the main objective of this study is to examine the relationship between type 2 diabetes mellitus and the development and severity of periodontal disease. In particular, the study aims to analyze how diabetes affects clinical parameters of periodontal health, such as pocket depth, clinical attachment loss, and gingival bleeding. Non-surgical periodontal procedures will be adopted over a period of 12 months, using plaque index and bleeding index as the main indicators.

Methods: twenty patients aged between 30 and 80 years were considered eligible for the study, with 50% male and 50% female, all diagnosed with Type II Diabetes Mellitus for at least 10 years and under therapeutic control. The treated patients first underwent a specialist dental visit, first-level radiographs, such as an OPT (Orthopantomogram), and completion

of the periodontal chart, including plaque index and bleeding index.

Results: non-periodontal surgical therapy is a very valid option, as when performed at the right time, it allows for halting the progression of bacterial action damaging the periodontium and preventing, in more severe cases, the loss of teeth.

Conclusions: in conclusion, it was possible to deduce that significant accumulations of plaque and tartar, and consequently tartar, can contribute to a worsening of the systemic conditions of diabetic patients over time. The 10 patients considered, although in a small number, showed improvement in terms of plaque and tartar, gingival inflammation, and periodontal probing depth, and it was observed that this also improved glycemic control.

ENDO-PERIO LESION: A CASE REPORT

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Aim: this case reports a clinical scenario of an endo-periodontal lesion evolving from an initial periodontal condition in tooth 4.1. Special emphasis is placed on the combined management of the endo-periodontal lesion, with the effectiveness of the proposed treatments evaluated over a 6-year follow-up.

Methods: initially, the patient exhibited signs of periodontitis, diagnosed through clinical and radiographic evaluations that revealed significant bone loss. No endodontic involvement was detected at the outset, as confirmed by a vitality test. After subgingival scaling, the condition did not improve and instead worsened, with signs of pulpal necrosis developing. The diagnosis was revised to an endo-periodontal lesion, requiring a combined treatment approach. The treatment plan involved

root canal treatment of tooth 4.1 to address the endodontic component, along with continued periodontal therapy, including monitoring and splinting.

Results: although scaling reduced local infection and inflammation, it did not resolve the lesion, which progressed into an endo-periodontal lesion. Canal treatment and splinting improved pain and dental stability. Radiographic follow-ups indicated a reduction in periodontal pocket depth. Over years of follow-up, tooth 4.1 maintained good periodontal stability, with no further progression of bone loss.

Conclusions: this case highlights the importance of a comprehensive, combined treatment approach for managing endo-periodontal lesions.

INTEGRATED SURGICAL AND ORTHODONTIC TREATMENT OF STAGE 4 PERIODONTITIS IN A YOUNG PATIENT: A CASE REPORT

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Aim: periodontitis in young individuals can present as a severe and rapidly progressing condition that leads to periodontal tissue destruction and bone loss. Pathological tooth migration and occlusal trauma exacerbate the disease. This report presents a clinical case of a young patient diagnosed with Stage 4 Periodontitis, with pathological tooth migration and occlusal trauma. The primary objective of this study is to outline the interdisciplinary treatment strategy that was implemented.

Methods: diagnosis involved periodontal charting and radiographs. The patient was then guided through the following plan: Step I, cause-related therapy and Step II, non-surgical periodontal therapy. Once clinical stability was achieved, Step III, the surgical phase was planned, which included open flap debridement and regenerative procedures. Enamel Matrix De-

rivative (EMD) was applied with deproteinized bovine bone graft material to enhance periodontal regeneration. A six-month orthodontic treatment plan was implemented, and a splint was bonded post-treatment.

Results: the interdisciplinary approach led to significant improvements. Regenerative therapy restored attachment levels and reduced probing depths. Orthodontic correction of overjet and overbite enhanced stability. A metallic splint prevented relapse. Maintenance included three-month recalls for plaque control.

Conclusions: managing Stage 4 Periodontitis requires an interdisciplinary strategy. In this case, the combination of regenerative periodontal therapy and orthodontic treatment effectively stabilized the dentition, eliminated occlusal trauma, and ensured long-term periodontal health.

CONNECTIVE TISSUE GRAFT TO RESTORE BUCCAL CONVEXITY IN AESTHETIC AREA: ONE YEAR FOLLOW-UP

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Aim: Connective Tissue Grafting (CTG) is an effective method to treat peri-implant mucogingival defect in the aesthetic zone. This study presents a clinical case where CTG with a bilaminar technique successfully was used for restoring a peri-implant buccal convexity of an aesthetic restoration.

Methods: a 58-year-old male patient in good overall and periodontal health, presented an pathological probing (PD = 10 mm on all perimplant sides) of an implant in aesthetic area; periapical X-rays revealed peri-implant bone resorption in mesial and distal aspects. The crown had incorrect emergence profiles, and the peri-implant mucosa appeared hyperemic and edematous. The treatment involved professional oral hygiene, followed by the replacement of the crown with a screw-retained temporary crown and narrower abut-

ment to promote soft tissue growth. After 4 weeks, mucogingival surgery with the bilaminar technique was performed. One year later, a final screw-retained zirconia restoration was placed.

Results: two years post-surgery, the patient maintained stable periodontal indices, and stable peri-implant bone on X-rays. The soft tissue quality was increased and the final restoration seamlessly integrated with the adjacent teeth.

Conclusions: this case demonstrates the long-term success of CTG in achieving soft tissue stability and preserving peri-implant health. It underscores the importance of increasing buccal soft tissue thickness to prevent gingival recession and transparency. The bilaminar technique effectively augmented both horizontal and vertical soft tissue.

CRITICAL ANALYSIS OF THE EVOLUTION OF THE DENTIST'S ROLE: THE INTEGRATION OF AESTHETIC MEDICINE INTO CLINICAL PRACTICE

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Aim: the Decreto Bollette (D.L. n. 34/2023) in Italy has expanded the professional scope of dentists, enabling them to perform non-invasive and minimally invasive procedures on the entire face. This study aims to assess the efficacy, safety, and patient satisfaction of Botulinum Toxin (BTX-A) injections for the management of gummy smile as alternative for treating hyperactive upper lip muscles.

Methods: a prospective clinical study was conducted on 10 patients (3 males, 7 females) aged 18-50 with a diagnosis of gummy smile due to hyperactivity of the upper lip elevators. Each patient received injections of BTX-A (Botox®) at targeted points on the upper lip muscles. Follow-up evaluations were performed at 14 days and 6 months post-treatment to meas-

ure the reduction in gingival display. Patient satisfaction and any side effects were recorded.

Results: a statistically significant reduction in gingival display was observed at 14 days (mean reduction: 3,9 mm). Most patients maintained improved outcomes at 6 months. Minimal side effects were reported, including minor bruising and swelling in a few cases, with no severe complications. Patient satisfaction was high, with all participants expressing positive feedback on the aesthetic results.

Conclusions: BTX-A injections are an effective, minimally invasive alternative for reducing gingival display in patients with gummy smile. The treatment is safe, with minimal side effects and high patient satisfaction. Long-term follow-up suggests that repeated treatments may enhance and prolong aesthetic outcomes.

TREATMENT OF A MILLER CLASS III DEFECT WITH MUCO-REGENERATIVE THERAPY: A CASE REPORT

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Aim: this case report aims to describe the diagnosis and treatment of stage 2 and grade 2 periodontitis with Miller's grade III severe recession at the level of dental elements 31-32-33-41-43.

Methods: a 41-year-old man with no significant medical history presented to our observation complaining of diffuse gingival bleeding and tooth sensitivity. On intraoral inspection by probing and periapical radiographs, stage 2 (PPD \leq 5 mm) and grade 2 (CAL $<$ 2 mm) periodontitis was diagnosed. The treatment plan included the implementation of steps 1, 2, 3, 4 and 5 of periodontal therapy (T1). Therapy of the fifth sextant included mucogingival surgical therapy of elements 33-32-31-41-43 by bilaminar free connective tissue grafting (T2). After completion of therapy, a periodontal maintenance regimen was established. The patient performed follow-up at 5 years (T3).

Results: at 3-month (T2) follow-up (after TPNC) shows overall recovery of periodontal health. After surgical therapy at the V sextant, periodontal maintenance therapy is performed, and at 5-year follow-up, complete root coverage was achieved for the fifth sextant. No bleeding on probing or recurrent GR was noted at the treated sites. The patient expressed satisfaction with the aesthetic results achieved.

Conclusions: the surgical therapy chosen proved effective in resolving the periodontal problem of the pc by allowing restoration of recessions and increasing the area of adherent gingiva. The choice of this surgical technique was again shown to be effective in Miller's class III large defects in the short and long term.

ANALYSIS OF ORTHOPANTOMOGRAPHY FOR PERIODONTITIS STAGING USING CONVOLUTIONAL NEURAL NETWORKS AND VISION TRANSFORMERS

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Aim: the study aims to develop a deep learning-based classifier to discriminate patients with advanced periodontitis (stages II, III, IV) from healthy individuals or patients with early stage periodontitis (gingivitis, stage I) using orthopantomography (OPT) exclusively.

Methods: the collected OPTs collected were classified according to the stage of periodontitis and divided into two groups (positive and negative). Each collected OPT was resized and subjected to histogram equalization, so as to equalize the distribution of intensity levels. Different deep learning architectures, including Convolutional Neural Networks (CNNs) such as EfficientNet and Vision Transformer (ViT) mod-

els, were tested, evaluating performance in terms of Accuracy and AUC.

Results: five hundred OPTs were included in this study. Among all configurations analyzed, EfficientNet's Feature Extraction Hybrid achieved an Accuracy of 0.90 and an AUC of 0.9146 on the test set. The DeiT base patch16 model, trained from scratch, achieved an Accuracy of 0.82 and an AUC of 0.936.

Conclusions: both CNNs and Transformers demonstrate high periodontitis classification capabilities by starting OPTs, suggesting their potential in supporting automated periodontitis diagnosis and optimizing clinical diagnostic workflows.

SEXUAL DIMORPHISM IN PERIODONTAL INFLAMMATION: A CROSS-SECTIONAL STUDY

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Aim: the purpose of the present study was to evaluate the role of Sexual Dimorphism (SD) in the clinical manifestation of plaque-induced periodontal inflammation by analyzing the association between patient-related factors and the full-mouth prevalence of Bleeding on Probing (BOP%) within two cohorts of male and female individuals.

Methods: data on BOP (dichotomously recorded as present/absent after the assessment of Probing Depth, PD) were retrospectively obtained from the files of adult patients undergoing a first periodontal visit at a university center. Two multiple regression models (one for males, one for females) were built with BOP% as the dependent variable and patient-related factors (i.e., age; smoking status; daily cigarette consumption; history of diabetes diagnosis;

number of teeth present; proportion of sites with PD \geq 5 mm around teeth) as independent variables.

Results: in males (n = 212), BOP% was 5.9% lower in smokers compared to non-smokers (p = 0.021). In females (n = 389), BOP% increased by 1.6% for each 10-year increase in age (p = 0.046). The proportion of sites with PD \geq 5 mm showed a strongly significant, positive association with BOP% irrespective of biological sex (p < 0.001).

Conclusions: SD manifested as a sex-dependent diversity in the association between patient-related factors and periodontal inflammation expressed as BOP%. While smoking determined a lower BOP% only in males, aging was associated with increased BOP% only in females.

IMMUNOPHENOTYPE AND ANGIOGENIC PROPERTIES OF PULPAL AND PERIODONTAL DERIVED ENDOTHELIAL STEM CELLS

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Teeth and their supporting tissues represent an accessible source of adult stem cells. Periodontal Ligament Stem Cells (PDLSCs) and Dental Pulp Stem Cells (DPSCs) both exhibit self-renewal and multipotency. PDLSCs are a heterogeneous population expressing mesenchymal (CD105, CD90, CD73, CD44), pericyte (CD146, ACTA2, CSPG4), endothelial (CD31), and epithelial (EpCAM) markers. Although angiogenesis is essential for periodontal regeneration, the interactions between mesenchymal stem/stromal cells and Endothelial Cells (ECs) remain poorly understood. ECs derived from dental pulp exhibit greater proliferation and migration, whereas those from the periodontal ligament form more robust capillary networks, indicating niche-specific angiogenic roles.

We isolated PDLSCs and DPSCs from the same extracted teeth and characterized them by flow cytometry. Both populations expressed MSC markers and demonstrated trilineage differentiation potential. DPSCs exhibited a higher proportion of CD31⁺ cells immediately after isolation, which declined in culture, while CD146⁺ cells expanded significantly. Co-culture experiments with HMEC-1 cells and transcriptomic analyses are currently underway.

Our findings suggest that DPSCs may comprise a more plastic cell population with the potential to contribute to angiogenesis through both endothelial and perivascular differentiation pathways.

EVALUATION OF THE AESTHETIC OUTCOME OF MUCOGINGIVAL ROOT COVERAGE TECHNIQUES

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Aim: as aesthetic demands in mucogingival surgery have increased, the Root coverage Esthetic Score (RES) was introduced to assess esthetic outcomes. However, gingival color evaluation remains subjective. This study aimed to enhance objectivity by modifying the RES through spectrophotometric analysis, as advocated by Gomez Polo, and to assess the impact of clinical variables on esthetic results.

Methods: twelve patients treated with root coverage surgery in the past 10 years were selected. Each site was evaluated using both the traditional RES and a modified version using a spectrophotometer. Gingival color was assessed by comparing treated and adjacent sites using L^* , a^* , and b^* values. A $\Delta E \geq 1$ indicated visible color difference (score 0); $\Delta E < 1$ indicated no perceptible difference (score 1). Additional data on reces-

sion type, tooth site, smoking, hygiene, gingival thickness, and patient satisfaction were collected.

Results: the modified RES yielded slightly lower scores, as the spectrophotometer detected $\Delta E \geq 1$ in all cases. Treated sites were lighter and less red, suggesting increased keratinization. Esthetic outcomes were classified as success (RES = 10), partial success (4-9), or failure (≤ 3). Failures were associated with undetectable CEJ, mandibular sites, smoking, poor hygiene, and thin gingiva.

Conclusions: the traditional RES is adequate in clinical settings, as patients don't perceive minor color differences. However, spectrophotometry revealed subtle changes and potential keratinization, supporting thicker grafts in challenging sites for improved outcomes.

SCREENING FOR PREDIABETES AND DIABETES IN THE DENTAL SETTING USING AN HBA1C POINT-OF-CARE DEVICE: AN OBSERVATIONAL STUDY

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Aim: between 2019 and 2020, diabetes affected 5.9% of the Italian population, with an additional one million undiagnosed cases. Prediabetes is a clinical condition of hyperglycemia, which can progress in type 2 diabetes at a 7.6% annual rate. Early diagnosis is crucial and dental clinics offer a unique chance for screening. This study aimed to assess the feasibility of screening for prediabetes/diabetes in a dental setting using a Point-Of-Care (POC) HbA1c finger-prick test, alongside the Società Italiana di Diabetologia (SID) diabetes risk questionnaire.

Methods: patients, referring to the UOC of Odontostomatologia I and II of the Dental Clinic G. Vogel – ASST Santi Paolo e Carlo, were enrolled in this cross-sectional study. Patients with already diagnosed diabetes/prediabetes were excluded. Clini-

cal history was recorded, and the Diabetes Risk Questionnaire and the Mini Nutritional Assessment Questionnaire were completed. Each patient received a finger-stick HbA1c test (Cobas o 101 system Roche). The cut-off values were set at $\geq 6.5\%$ for diabetes and 5.7-6.4% for prediabetes.

Results: 48 patients (34 women, 14 men, mean age 56 ± 15.74 years) were included in the analysis. The 18.75% ($n = 9$ out of 48) showed unknown prediabetes, with HbA1c values $\geq 5.7\%$, but below the threshold of 6.5%, and they were referred to the Diabetology Unit.

Conclusions: chairside HbA1c screening is quick and easy, demonstrating potential for routine use. It may enable early diagnosis, identifying still unknown cases.

A NOVEL NON-SURGICAL THERAPY FOR PERI-IMPLANT MUCOSITIS: ENHANCED BIOFILM DECONTAMINATION THROUGH SODIUM HYPOCHLORITE, AMINOACID AND CROSS-LINKED HYALURONIC ACID

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Aim: the aim was to evaluate the effect of non-surgical periodontal therapy in managing Peri-implant Mucositis (PiM) with or without the application of Cross-linked Hyaluronic Acid and Sodium Hypochlorite and Aminoacid. The primary outcome was to assess the complete resolution of peri-implant mucositis.

Methods: 20 implants with peri-implant mucositis (at least one site with positive Bleeding on Probing) were selected and randomly divided into two groups: test group was treated with Sodium Hypochlorite gel and Cross-linked Hyaluronic Acid while control group was treated only with non-surgical periodontal therapy. Follow-up evaluations were conducted at 4 weeks. After 4 weeks the number and percentage of implants with PiM were recorded and a statistical analysis was performed (Chi-Square test for intergroup analysis and Wilcoxon test for paired samples for intragroup analysis).

Results: clinical results demonstrated that the CLEAN&SEAL® therapy led to reduction in BOP and therefore a resolution of peri-implant mucositis. After one month, the intragroup analysis showed in both groups a statistically significant PiM reduction ($P \leq 0.05$) but while in test group only 20 % of implants were still affected by PiM in control group the percentage raised up to 70 %. The intergroup comparison at one month was statistically significant ($P = 0.025$), indicating better outcomes in the test group.

Conclusions: although a complete PiM resolution was not obtained in either group, the CLEAN&SEAL® therapy represents an effective non-surgical adjunctive therapy for the treatment of peri-implant mucositis. Therefore, this approach should be considered in order to reduce the number of sites with positive BOP around implants, contributing to enhance patient outcomes and providing a valuable tool for clinicians in peri-implant soft tissues therapy.

LONG TERM (10-YEARS) AESTHETIC MODIFICATIONS OF SOFT TISSUE AFTER PERIODONTAL PLASTIC SURGERY: A PRELIMINARY EVALUATION OF 9 PATIENTS

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Aim: the aim of this preliminary study is to evaluate the aesthetic results of different root coverage procedures.

The changes obtained at the soft tissue level were evaluated through the Root Coverage Aesthetic Score (RES).

Methods: in the present study, nine teeth from nine different patients affected by gingival recession and treated with root coverage surgical techniques were included. In particular, Coronally Advanced Flap (CAF), Coronally Advanced Flap with Connective Tissue Graft (CAF + CTG) and Free Gingival Graft (FGG) were used to cover the exposed roots. The root coverage aesthetic score (RES) on clinical photos was rated by an examiner not involved in the clinical procedures at 3 follow-up periods: 1 year, 5 years and 10 years.

Results: depending on the follow-up period, the following data were observed: at 1 year of follow-up the mean RES was 7.7 ± 2.4 , at 5 years the mean RES was 8.4 ± 1.4 , at 10 years the mean RES was 8.1 ± 1.4 and the values were always ≥ 7 , regardless the type of intervention. Thus, RES was stable at different follow-ups.

Notably, the surgery with the more fluctuating values was the FGG (from 4 to 9 points).

Conclusions: despite the limitations of this study, periodontal plastic procedure may achieve high RES scores that may remain stable up to 10 years of follow-up, especially for CAF procedures, with or without CTG.

MOLECULAR PROFILE OF RESPONDING AND NOT-RESPONDING SITES TO NON SURGICAL PERIODONTAL THERAPY

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Aim: this pilot study aimed to explore the molecular expression of Gingival Crevicular Fluid (GCF) in Non-Responding (NR) and Good-Responding (GR) sites at baseline and 3 months after Non-Surgical Periodontal Treatment (NSPT).

Methods: periodontal clinical parameters and saliva were collected before and after NSPT from 10 stage III/IV, grade B/C patients. At the same time points GCF was collected from 1 GR site (pocket closure or improvement ≥ 2 mm in PPD at 3 months) and 1 NR site (no PPD improvements or worsening at 3 months) per patient. A multiplex bead immunoassay was performed to profile 15 GCF biomarkers involved in inflammation, connective tissue destruction and regeneration. The difference in clinical parameters and biomarkers was investigated. Moreover, the relation between NR/GR sites and salivary biomarkers was assessed.

Results: all GR sites were in single-rooted teeth, while all NR sites were in multi-rooted teeth. At baseline, IL-4, CCL-3, BMP-2 and OPN were significantly higher in NR sites compared to GR sites. In GR sites a significant decrease in interleukin (IL)-1 β , IL-17, IL-4, C-C motif Chemokine Ligand (CCL)-2, CCL-3, IL-6, IL-10, Bone Morphogenetic Protein (BMP)-2, sclerostin (SOST), S100 calcium-binding protein A8 (S100/A8) and Matrix Metalloproteinase (MMP)-8 level was observed, whereas in NR sites no significant changes for the same markers were observed. No correlation was shown between salivary and GCF markers.

Conclusions: GR and NR sites seem to present a distinct molecular pattern both at baseline and 3 months post-NSPT. Based on these preliminary data, salivary markers do not correlate with GCF markers.

BUCCAL SOFT TISSUE PROFILE CHANGES AFTER IMMEDIATE IMPLANT PLACEMENT AND IMMEDIATE PROVISIONALIZATION: PRELIMINARY DATA

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Aim: immediate implant placement and provisionalization in the aesthetic zone represent a clinical challenge, particularly in maintaining the buccal soft tissue profile, that is crucial for achieving optimal esthetic outcome.

The primary aim of this study is to evaluate buccal soft tissue profile changes after immediate implant placement and provisionalization in aesthetic area. The secondary aim is to assess buccal hard tissue changes and PROMs.

Methods: 5 patients with the need of single tooth extraction in the aesthetic area were treated with prosthetically driven immediate implant placement. Bone substitute was placed filling the gap between the buccal socket wall and the implant surface and adjunctive soft tissue augmentation with collagen matrix was positioned at the vestibular aspect. Immediate screw-retained provisional restoration will be delivered.

Buccal soft/hard tissue changes were assessed comparing digital impressions and CBCT taken at baseline (before tooth extraction) and 4 months after immediate implant placement and provisionalization. PROMs, regarding pain was assessed by means of a VAS (1-10).

Results: comparison of STL files from digital impression shows a slight reduction of the buccal soft tissue profile and a slight bone resorption at the marginal buccal aspect. VAS regarding pain was lower than 3.

Conclusions: this study seeks to provide clinical and radiographic volumetric evidence on the effectiveness of IIP in maintaining buccal soft tissue stability.

Findings may help refine treatment protocols to optimize aesthetic and functional outcomes in immediate implant placement cases.

VITAL ROOT AMPUTATION IN MOLARS WITH ADVANCED PERIODONTAL FURCATION INVOLVEMENT: A PRELIMINARY STUDY

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Aim: to evaluate whether it is possible to maintain a vital and healthy pulp in periodontally compromised molars with advanced furcation involvement undergoing root amputation.

Methods: patients, diagnosed with Stage III-IV periodontitis with molars exhibiting advanced furcation involvement, underwent to root amputation and retrograde pulp capping. The procedure was performed under local anesthesia, preserving at least 3 mm of the coronal third of the root canal space, which was sealed with bio-compatible materials. Patients will be monitored through clinical and radiographic evaluations over a 6-month follow-up period.

Results: 2 periodontally compromised patients with class III furcation involvement were treated with vital root amputation. Tooth vitality and healthy periodontal tissues are maintained at 6 months follow-up.

Conclusions: this study explores the feasibility of maintaining pulp vitality after root amputation in periodontally compromised molars. If successful, this approach may offer a minimally invasive alternative to traditional root resection, reducing treatment complexity, costs, and potential endodontic complications.

THREE-DIMENSIONAL DIGITAL EVALUATION OF CHANGES IN GINGIVAL MARGIN POSITION AND GINGIVAL THICKNESS AFTER PERIODONTAL REGENERATIVE SURGERY PROCEDURES AROUND TEETH: A PROSPECTIVE STUDY

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Aim: the main purpose of this study is to evaluate the linear and volumetric changes in the position of the gingival margin and gingival thickness following periodontal regenerative surgery, pursuing the Connective Tissue Graft Wall technique, with the aid of three-dimensional digital scans.

Methods: the subjects included were 7 adult patients, aged 31-69 years, one of them was a smoker. All of them presented intrabony defects and soft tissues recessions in the esthetic area, which have been treated with the Connective Tissue Graft Wall Technique. To compare and supervise the soft tissue changes, after 6 weeks, 3 months, 6 months and 1 year a follow-up was conducted, comprising a new intraoral scan. For each patient, the digital models were analyzed and superimposed with the aid of a metrology software.

Results: twelve months post-surgery, periodontal regeneration was evaluated both clinically (PPD reduction, REC reduction,

CAL gain) and radiographically (BL gain). Six months after surgery the digital model's analysis has shown that the mean reduction of the vestibular recession was 1.56 ± 1.12 mm ($p = 0.0017$), and the mean percentage of root coverage was $54.88 \pm 40.06\%$ ($p = 0.0017$). Furthermore, the distance between the profile of the papilla overlying the defect and the contact point decreased by an average of 2.78 ± 0.43 mm ($p = 0.047$) over six months. Lastly, at the treated sites, there was a mean increase in gingival thickness of 0.82 ± 0.64 mm ($p = 0.0001$).

Conclusions: although further investigations are needed, the connective tissue wall surgical technique can be considered an effective approach in the treatment of deep intrabony defects; at the same time, allows to ameliorate the characteristics of soft tissues at both the vestibular and interproximal levels.

A MULTICENTER CLINICAL STUDY TO COMPARE THE VERTICALLY AND CORONALLY ADVANCED FLAP (V-CAF) VS THE LATERALLY CLOSED TUNNEL (LCT) IN THE TREATMENT OF SINGLE GINGIVAL RECESSION IN MANDIBULAR INCISORS

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Aim: the aim of this explanatory parallel controlled multicenter (University of Bologna and University of Bern) clinical study is to evaluate root coverage outcomes in the treatment of single gingival recession affecting lower incisors with 2 novel treatment (V-CAF vs LCT) under ideal condition since the techniques will be not randomized but performed by the most experienced surgeons in the technique itself. In contrast to traditional RCT the goal of this concept proof protocol is to compare the best possible achievable outcomes of the 2 techniques in an ideal setting, comparing efficacy and not effectiveness.

Methods: the primary objective is to compare 2 surgical techniques in terms of root coverage, and the secondary objective is to compare the techniques with respect to soft tissue thickness, KT, periodontal parameters, increase in vestibule depth. 20 patients per group are included in the trial if 18 years or older, with single RT1-RT2 recession in lower incisors >3 mm and

systematically health. Measurements are collected at baseline (T0), 6 months (T1) and 12 months (T2) post-surgery: Rec Depth, Gingival Thickness, Residual Vestibule Depth, as well as digital impressions using an intraoral optical scanner. The appearance of the soft tissue is evaluated using the Root Coverage Esthetic Score at T2.

Results: 5 patients per group were included in the preliminary results. The mean Rec Depth was 4.2 mm for the V-CAF group and 4.3 mm for the LCT group. The mean root coverage at T1 was 95% in the V-CAF group and 92% in the LCT group. The RES score was evaluated only in 1 patient per group at T2, obtaining 10 points.

Conclusions: no statistically significative difference has been observed in terms of root coverage comparing V-CAF and LCT, therefore both surgical techniques, under ideal conditions, are indicated in the treatment of gingival recession at mandibular incisors.

PLASMONIC OPTICAL-FIBER-BASED POINT-OF-CARE TEST FOR PERIODONTAL MIP-1A DETECTION: A VALIDATION STUDY OF A MULTIPLEXED BIOSENSOR PROTOTYPE

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Aim: the present study aimed to assess the analytical performance of a multiplexed plasmonic optical-fiber-based Point-Of-Care Test (POCT) in detecting and quantifying salivary macrophage inflammatory protein-1 alpha (MIP-1 α) by comparing it with Enzyme-Linked ImmunoSorbent Assay (ELISA).

Methods: three Plastic Optical Fibers (POFs) were modified to host a Self-Assembled Monolayer (SAM) of anti-MIP-1 α antibodies. Each of them was interposed between a light source and a spectrometer to detect the variations of the refractive index at the POF-SAM interface caused by Surface Plasmon Resonance (SPR) when the antibody-analyte binding occurred. A dose-response Langmuir curve, with MIP-1 α dilutions from 0.25 to 10 pM, was calculated. Fifty salivary samples from consecutively enrolled subjects were tested by the

SPR-POF biosensor and ELISA, and the obtained values were compared (Spearman's Rank correlation test). Differences in MIP-1 α levels among patients based on age, gender, and periodontitis were also analysed (Mann-Whitney U-test).

Results: a strong positive correlation between SPR-POF and ELISA measurements was found (Spearman's $r_s = 0.894$, $p < 0.001$). The SPR-POF Limit of Detection (LoD) was 0.15 pM, even lower than the ELISA (0.78 pM). Higher ($p < 0.05$) MIP-1 α levels in periodontitis compared to non-periodontitis patients were found.

Conclusions: the developed plasmonic POCT performed comparably to ELISA in detecting and quantifying salivary MIP-1 α , both in terms of LoD and accuracy, with measurement rapidity and reliability enhanced by the multiplexed three-arm design.

FACTORS INFLUENCING POCKET CLOSURE IN SURGICALLY-TREATED INTRAOSSEOUS DEFECTS: A RETROSPECTIVE ANALYSIS

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Aim: to evaluate the association between patient- and local factors and pocket closure (i.e., probing depth, PD, ≤ 4 mm) following surgical treatment of intraosseous defects.

Methods: 101 defects in 101 patients treated with the Single Flap Approach (SFA) alone or in combination with enamel matrix derivative with/without a bovine-derived xenograft were retrospectively included. Pocket closure at 12 months was the primary outcome. Age, sex, smoking status, baseline PD, site, depth of the SUPRAosseous component (SUPRA), radiographic depth of the INTRAosseous component (r_INTRA), defect angle, defect morphology, treatment modality were considered as candidate determinants in a bivariate logistic regression analysis. Backward stepwise regression was used to identify the optimal set of factors significantly associated with pocket closure.

Results: at 12 months, pocket closure occurred in 74.3% of cases. The probability of pocket closure was significantly associated with baseline PD (OR = 0.741, 95%CI: 0.565 – 0.973; $p = 0.031$) and defect morphology, with defects classified as “mainly 1-wall” and “mainly 3-wall” showing greater odds for pocket closure compared to “mainly 2-wall” defects (OR = 7.125, $p = 0.006$; and OR = 5.225, $p = 0.006$, respectively).

Conclusions: when performed according to the SFA, regenerative surgical procedures are associated with high probability of pocket closure at 12 months.

Intraosseous lesions with deeper pre-surgery PD and/or prevalent 2-wall morphology have lower probability to be closed.

PSYCHOLOGICAL AND CLINICAL OUTCOMES OF MOTIVATIONAL INTERVIEWING AT FIRST PERIODONTAL CONSULTATION: A MULTIPLE REGRESSION ANALYSIS OF ASSOCIATED FACTORS ON DATA FROM A RANDOMIZED TRIAL

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Aim: to evaluate the association between patient characteristics and the outcomes of Motivational Interviewing (MI) at first periodontal consultation.

Methods: data from a randomized trial were retrospectively analyzed. The changes in scores Positive Affect Negative Affect Scale (PANAS) and Protection Motivation Theory (PMT) were the primary outcomes, while the change in Full-mouth Plaque Score (FMPS) at 8-12 weeks was the secondary outcome. Using multiple regression, patient-related variables (assessed immediately before MI) were evaluated as candidate outcome predictors.

Results: 101 patients were included. Among the candidate predictors: (i) age, PMT items *Seriousness* and *Effectiveness*, PANAS-negative overall score, BoP score, n° of teeth lost due to periodontitis significantly influenced the change in PMT

score; (ii) PANAS-positive items *Interested*, *Careful*, *Strong*, and *Enthusiastic* and PANAS-negative items *Scared*, *Irritable*, and *Nervous* significantly influenced the change in PANAS-positive score; (iii) age, anxiety/depression, PANAS-negative items *Aware*, *Hostile*, *Nervous*, and *Restless*, PANAS-positive item *Excited*, periodontitis stage and extension, number of teeth lost due to periodontitis, significantly influenced the change in PANAS-negative score; (iv) PANAS-negative items *Shame* and *Afraid*, periodontitis stage, n° of teeth lost due to periodontitis, BoP score, and FMPS value significantly influenced FMPS change.

Conclusions: at first periodontal consultation, a combination of clinical assessments and psychological profiling may help to predict the patient response to MI.

TREATMENT OF DEEP INTRABONY DEFECTS USING A MIXTURE OF POLYNUCLEOTIDES AND HYALURONIC ACID WITH OR WITHOUT XENOGENIC BONE SUBSTITUTE: A RETROSPECTIVE STUDY

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Aim: the aim was to assess the safety and clinical performance of a mixture of Polynucleotides and Hyaluronic Acid (PN-HA) with or without xenogenic bone substitute with Papillary Preservation Flaps (PPFs) in the treatment of residual pockets.

Methods: to be enrolled, all the patients had residual periodontal pocket ≥ 5 mm associated with intrabony defects ≥ 3 mm at x-ray after step I and II. All the defects were treated with PPF and a gel containing a fixed combination of natural origin PN and HA. After root debridement, PN-HA alone was applied over the root after gentle drying. If the supporting bony anatomy was insufficient (non-containing defect), DBBM was used based on clinical judgment.

Results: 43 patients, among which 13 were smokers, with a total of 55 intrabony defects, were recruited. At baseline, the

mean PD was 7.7 ± 1.9 mm with a corresponding mean Rec of 1.9 ± 1.3 mm. Thirty-one defects (56%) were considered as non-containing, and thus DBBM was applied. Healing was uneventful at all treated sites and primary wound closure was complete in 93% of sites at suture removal. After 1 year, there was a mean PD reduction of 4.4 ± 1.8 mm and a corresponding CAL gain of 3.5 ± 2.0 mm; the associated radiographic Bone Fill was 3.5 ± 1.9 mm. When assessing the benefit of adding DBBM, no difference between the two groups was detected.

Conclusions: as no major adverse effects were observed, PN-HA mixture is a safe product for periodontal surgery and seems to promote clinical benefits in the treatment of residual pockets associated with intrabony defects.

LONG TERM EVALUATION (5 YEARS) OF MODIFIED CORONALLY ADVANCED FLAP (MCAF) WITH OR WITHOUT CONNECTIVE TISSUE GRAFT (CTG) FOR THE TREATMENT OF MULTIPLE GINGIVAL RECESSIONS

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Aim: Gingival Recession (GR) is defined as the apical shift of the gingival margin compared to the Cemento-Enamel Junction. The aim of this study is to evaluate the long-term stability of MCAF and MCAF+CTG Root Coverage Surgical Procedures (RCSPs).

Methods: patients who underwent MCAF surgery between January 2018 and December 2022, with a follow-up of 1, 3 and 5 years were included. Measurements of clinical parameters (Recession Depth, Keratinized Tissue Width [KTW], Bleeding and Probing Depth) and aesthetic parameter (Root Esthetic Score, RES) were performed before the surgical procedure and at 1, 3 and 5 years.

Results: 20 patients completed the 1-year and 3-year follow-up (55 GRs), while 16 (44 GRs) out of 20 completed the

follow-up at 5 years. The Complete Root Coverage (CRC) and Mean Root Coverage (MRC) results obtained at 1- and 3-years showed no significant variation at long term evaluation: at 5 years CRC was 85% for MCAF and 83.33% for MCAF+CTG, while MRC was 94.75% for MCAF and 92.37% for MCAF+CTG, without any significant difference between groups. A statistically significant difference in KTW change between 5 years and baseline was found in favor of MCAF + CTG ($p = 0.0006$). RES remained stable between 3 and 5 years (MCAF: 9.35 ± 1.35 ; CTG: 9.04 ± 1.40 ; $p = 0.38$).

Conclusions: the MCAF and MCAF+CTG techniques have proven to be reliable RCSPs, showing stable results in terms of periodontal health, RC and aesthetic evaluation in the short (1 year), medium (3 years) and long term (5 years).

THE USE OF BIPHASIC CALCIUM SULPHATE IN ASSOCIATION WITH A BOVINE-DERIVED XENOGRAFT IN THE TREATMENT OF PERIODONTAL INTRABONY DEFECTS: A 3 AND 5-YEAR RETROSPECTIVE STUDY

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Aim: the purpose of this study was to evaluate the long-term results of a reconstructive protocol for the treatment of deep periodontal intrabony defects using a composite graft consisting of a mixture of equal parts of Deproteinized Bovine Bone and biphasic Calcium Sulphate.

Methods: a retrospective study was conducted with a 3 and 5-year follow-up, on patients who had at least one tooth with a bone defect with a Probing Pocket Depth (PPD) greater than 6 mm and who underwent periodontal regenerative surgery. Clinical and radiological parameters were recorded before the surgery (T0), at 1 year (T1), 3 years (T2) and 5 years (T3).

Results: from T0 and T3, the mean PPD showed a significant reduction equal to 6.41 ± 3.31 mm and Clinical Attachment

Level (CAL) values significantly decreased of 4.45 ± 2.22 mm. Furthermore, an increase of 1.00 ± 1.12 mm in Recession (Rec) was found. A statistically significant bone gain of 4.94 ± 1.68 mm was also assessed. The results obtained 1 year after surgery were almost stable in the 3 and 5-year follow-ups, as no statistically significant changes were recorded. The addition of biphasic calcium sulphate to deproteinized bovine graft demonstrated satisfactory filling percentages, even in non-contenitive defects with defect angles greater than 30° and with 1-2 walls.

Conclusions: this protocol suggests a valid approach in reconstructive periodontal therapy, favorably comparable to results reported in the literature regarding the use of bovine-derived grafts, alone or in association with 10% collagen.

SHAPING THE PINK: RETROSPECTIVE INSIGHTS INTO PAPILLA MORPHOLOGY AROUND ADJACENT IMPLANTS AND NATURAL TEETH

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Aim: this retrospective study aimed to evaluate the influence of clinical, anatomical, surgical, and prosthetic parameters on the inter-implant and peri-implant papilla morphology between two adjacent implants and tooth-implant.

Methods: 82 patients were selected (M = 40; F = 42) with a mean age of 67 years presenting 122 inter-implant papillae and 123 tooth-implant papillae. Clinical and radiographic data were retrospectively collected, including demographic characteristics, prosthetic design, distance from contact point to bone and interproximal distances. Papilla height was classified with the Nordland & Tarnow and measured in millimeters. Radiographic measurements were performed using ImageJ software. The acquired data was statistically analyzed.

Results: preliminary analysis indicated that inter-implant papilla height was significantly associated with vertical and horizontal distances from the contact point to the bone crest. Additional influencing factors included the emergence profile, the presence of platform switching, and the periodontal phenotype. The surgical technique showed limited impact on papilla formation.

Conclusions: inter-implant papilla height is a multifactorial phenomenon. Vertical and horizontal bone relationships are the most predictive indicators, prosthetic design and soft tissue phenotype also play a relevant role.

Pre-surgical planning is essential to optimize aesthetic outcomes.