

TL1A/DR3 DELETION ATTENUATES MUCOSAL INFLAMMATION AND ALVEOLAR BONE LOSS IN A MURINE MODEL OF SPONTANEOUS PERIODONTITIS

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Aim: the TL1A/DR3 axis is a key regulator of mucosal immune responses, yet its role in periodontal disease is unknown.

Methods: here, we investigated whether TL1A/DR3 signaling contributes to mucosal immune amplification and tissue-destructive inflammation in periodontitis using the SAMP1/YitFc (SAMP) model, which develops spontaneous ileitis and periodontal disease.

Results: DR3 deficiency markedly attenuated alveolar bone loss and improved periodontal tissue architecture, restoring a phenotype comparable to healthy controls. Gingival tissues from wild-type mice exhibited increased expression of both *T11a* and *Dr3*, alongside a positive correlation between *Dr3* levels and disease severity. This was accompanied by elevated

pro-inflammatory cytokines, including IL-17, TNF- α , and IL-1 β , and increased frequencies of CD4⁺ T helper cells and neutrophils. In contrast, SAMPxDR3^{-/-} mice showed a significant reduction in these inflammatory and cellular responses. These findings support a model in which the TL1A/DR3 axis is associated with amplification of mucosal immune responses in periodontal disease, linking effector T cell activation, cytokine production, and innate immune cell recruitment.

Conclusions: altogether, our data identify the TL1A/DR3 cytokine: receptor pair as a potential regulator of inflammatory circuits driving periodontal pathology. Blocking this pathway may provide a novel therapeutic modality for patients affected by chronic periodontitis.

A NOVEL PERIO-RESTORATIVE APPROACH FOR THE TREATMENT OF GINGIVAL RECESSON ASSOCIATED WITH NON-CARIOUS CERVICAL LESIONS

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Aim: the aim of this case report is to describe the step-by-step procedure of an innovative combined surgical-conservative approach for the treatment of gingival recessions associated with NCCLs based on the principles of the BOPT, and to evaluate the behavior and volumetric changes of the marginal periodontal tissues.

Methods: the restoration of the NCCL is performed in the pre-surgical phase with an accentuated emergence profile. This allows for the formation of a three-dimensional polygon that favors clot adhesion and horizontal tissue healing. The mucogingival flap, created using the tunneling technique to preserve tissue vascularization, is then coronally advanced and stabilized with suspended sutures anchored to the restored crown.

Results: the present case report demonstrated complete root coverage, with a MRC of 100%, corresponding to a 5 mm reduction in gingival recession at the 6-month follow-up. A gain in KTT of 1.9 mm was observed, along with an increase in KTW of 2.1 mm. No bleeding on probing was detected, and plaque scores remained absent throughout the follow-up period, indicating excellent periodontal health and patient compliance.

Conclusions: the emergence profile of the cervical lesion restoration, the reduction of root convexity, and the creation of a three-dimensional polygon may play a crucial role in promoting volumetric changes in the coronally repositioned supramarginal gingiva. The adopted approach appears ideal and appropriate for patients with a thick biotype who do not require gingival grafts to increase the amount of keratinized tissue.

RECONSTRUCTIVE SURGICAL MANAGEMENT OF HARD AND SOFT TISSUES: A 3-YEAR FOLLOW-UP CASE REPORT

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Aim: peri-implant mucositis and peri-implantitis are common complications of implant therapy, significantly affecting implant survival and patient quality of life. The increasing use of implant-supported rehabilitations has raised their prevalence, highlighting the need for evidence-based management. In accordance with the European Federation of Periodontology (EFP), regenerative surgery is an effective approach to restore peri-implant tissues through implant surface decontamination and biomaterials.

Case Presentation: this report describes a patient classified as ASA III, rehabilitated with a bridge supported by implants in positions 1.4 and 1.6. The patient presented with peri-implantitis, classified as AB according to the Schwarz classification. Radiographic assessment revealed a contained bone defect around the implant at site 1.4. Following

removal of the prosthesis, a mucoperiosteal flap was elevated, and meticulous debridement and decontamination were carried out using titanium brushes. The suprabony component was managed with implantoplasty, while the intrabony defect was grafted with deproteinized bovine bone and covered with a resorbable membrane. A free epithelial-connective tissue graft was subsequently performed to enhance the peri-implant soft tissue profile.

Results: at the 3-year follow-up, both clinical and radiographic stability were observed, with no signs of infection or suppuration and a reduction in probing depths.

Conclusions: regenerative surgery, when combined with appropriate maintenance, represents an effective treatment strategy for peri-implantitis.

A TOOTH-PRESERVING APPROACH TO INVASIVE CERVICAL RESORPTION: A CASE REPORT

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Aim: Invasive cervical resorption (ICR) is a localized resorptive process affecting the cervical portion of the root, leading to irreversible loss of dental tissues. The prognosis of severe ICR is generally unfavorable due to the lesion's location. While restorative and endodontic treatments may be effective in some cases, extraction is often indicated in advanced stages. This study aims to present a tooth-preserving approach for ICR, avoiding extensive surgical procedures.

Methods: a 67-year-old female patient undergoing treatment for stage III, grade B periodontitis presented with a severe bone defect affecting tooth 3.1. Despite multiple non-surgical interventions, recurrence occurred due to poor oral hygiene. In 2023, ICR associated with an endo-periodontal lesion was diagnosed on tooth 3.1, with pulpal involvement and loss of vi-

tal. A tooth-preserving approach was adopted. The tooth was atraumatically extracted, the resorptive defect was debrided and the cavity restored with composite. The apical granuloma was excised and the apex sealed with MTA, avoiding complete root canal treatment. The tooth was then replanted and splinted to ensure stability and function.

Results: at the 3-month follow-up, radiographic healing of the periapical lesion was observed. In 2025, the clinical condition remained stable, with no radiographic evidence of periapical resorption or ICR.

Conclusions: a tooth-preserving approach to ICR may yield favorable clinical and radiographic outcomes, preserving tooth function and aesthetics while avoiding surgical intervention. Further evidence is required to establish standardized treatment protocols.

VITAL PULP PRESERVATION IN PERIODONTALLY COMPROMISED MOLARS UNDERGOING ROOT AMPUTATION

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Aim: to evaluate the feasibility of maintaining vital and healthy pulp tissue in periodontally compromised molars with advanced furcation involvement undergoing root amputation.

Methods: patients diagnosed with Stage III-IV periodontitis presenting molars with advanced furcation involvement underwent root amputation combined with retrograde pulp capping. All procedures were performed under local anesthesia. At least 3 mm of the coronal third of the root canal space was preserved and sealed with biocompatible materials. Patients were monitored through clinical and radiographic evaluations over a 12-month follow-up period.

Results: four patients with periodontally compromised molars and Class III furcation involvement were treated with vital root amputation. At the 12-month follow-up, one case of pulpitis was observed, while pulp vitality was preserved in three patients. In these cases, periodontal tissues appeared clinically healthy.

Conclusions: this study suggests that maintaining pulp vitality after root amputation in periodontally compromised molars is feasible. If confirmed, this approach may represent a minimally invasive alternative to traditional root resection, potentially reducing treatment complexity, costs, and endodontic complications.

COMPUTER-ASSISTED BONE SEGMENTATION IN THE MANAGEMENT OF COMPLEX PERIODONTITIS WITH MULTIPLE INFRABONY DEFECTS: A CASE REPORT

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Aim: this case report demonstrates the application of computer-assisted segmentation in planning and managing a complex periodontal case.

Methods: a 71-year-old woman was referred to the Dentistry Unit of Policlinico di Bari in 2025 for calcium antagonist-induced gingival overgrowth and a gingival lesion associated with tooth 2.3. Periodontal charting and a low-dose CBCT scan were performed. Diagnosis: Stage III, Grade C periodontitis. Automated segmentation using radiological software enabled accurate assessment of infrabony defects. Cause-related periodontal therapy was carried out using both manual and ultrasonic instrumentation. At re-evaluation, probing pocket depths were reduced, with decreased bleeding on probing and improved plaque control. The gingival lesion was surgical-

ly excised, and a coronally advanced flap was performed to achieve root coverage and optimize soft tissue healing.

Results: a single periapical radiograph delivers 1 to 5 μ Sv, a low-dose CBCT ranges from 10 to 50 μ Sv. In complex anatomical regions, multiple intraoral radiographs may approach CBCT exposure levels. In this case, with one-, two-, and three-wall infrabony defects, 3D radiographic assessment was decisive for both periodontal therapy and surgical management. No intra- or postoperative complications occurred. Histopathology confirmed a fibroepithelial polypoid lesion, successfully treated with mucogingival surgery.

Conclusions: computer-assisted bone segmentation is a valuable adjunct in managing periodontal patients with multiple infrabony defects.

CLINICAL IMPACT OF VITAMIN D DEFICIENCY ON PERIODONTAL HEALTH: A CASE REPORT

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Aim: this case report aims to show the clinical importance of severe vitamin D deficiency in the development and progression of periodontal disease and to highlight the need to include vitamin D assessment in routine dental practice.

Methods: a 25-year-old female patient presented with gingival bleeding, tooth mobility, and hypersensitivity. A full periodontal examination and radiographic evaluation showed generalized alveolar bone loss that was not expected for her age and medical history. No common risk factors were identified. Based on suspicion of a systemic condition, blood tests were requested, including serum 25-hydroxyvitamin D [25(OH)D]. A multidisciplinary treatment plan was established.

Results: laboratory results showed severe vitamin D deficiency, with baseline 25(OH)D levels of 8.3 ng/mL. The patient received vitamin D supplementation under medical supervision, together with non-surgical periodontal therapy,

oral hygiene instructions, and necessary restorative and endodontic treatments. Clinical follow-up showed clear improvement, including reduced gingival inflammation, less bleeding on probing, better plaque control, and stabilization of periodontal status. Radiographic findings suggested no further bone loss. At the 6-month follow-up, serum 25(OH)D levels were 8.9 ng/mL, showing no meaningful improvement and remaining in the range of severe deficiency (<10 ng/mL), despite supplementation.

Conclusions: this case highlights the possible role of severe vitamin D deficiency in periodontal breakdown, even in young and otherwise healthy patients. It supports the importance of considering systemic factors in dental diagnosis. Checking vitamin D levels in patients with unexpected periodontal damage may help improve treatment outcomes and support long-term oral health.

PRIMARY EXTRANODAL NON-HODGKIN'S B-CELL LYMPHOMA OF THE MAXILLARY GINGIVA

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Aim: Non-Hodgkin lymphoma (NHL) of the oral cavity is a rare extranodal malignancy characterized by clonal proliferations of lymphoid cells. It appears as a rapidly enlarging swelling, a firm mass or ulceration. The case reports a primary intraoral B-cell NHL misdiagnosed as a periodontal disease.

Methods: a 53-year-old female was referred to the Department of Clinical Specialistic and Dental Sciences, Ancona, Italy, complaining a gingival swelling of the upper right molars for one year. She underwent several surgical and non-surgical periodontal treatments and medical therapy from her general dentistry. Blood and antibody tests and dental radiographs were unremarkable.

Results: no palpable cervical lymph nodes were revealed. Intraoral examination showed a tense-elastic gingival swelling

ranging from canine to molar area, with a slightly oedematous mucosa and a probing depth of 20 mm on the 1.6. Bone resorption of the posterior right maxilla was detected on the CBCT. The immunohistochemical analysis of the biopsy specimen showed B-lymphocytes positive to CD5, 10, 20, 30, and bcl2, bcl6. The PET/CT and bone marrow aspiration revealed no nodal disease and metastasis. HIV and HBV infections were excluded. A diagnosis of primary intraoral NHL was made. Six cycles of chemotherapy and radiation therapy were scheduled.

Conclusions: the unspecific symptoms of NHL can lead to delayed diagnosis, mimicking benign dental conditions, highlighting the critical role of dentists in the early detection. An integrated diagnostic approach and definitive biopsy is critical for accurate diagnosis and staging.

SINGLE FLAP APPROACH AND A GEL CONTAINING HYALURONIC ACID AND POLYNUCLEOTIDES IN THE TREATMENT OF PERIODONTAL POCKETS ASSOCIATED WITH A SUPRAOSSEOUS DEFECT IN AN ESTHETIC AREA. A CASE REPORT

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Aim: to describe the combined use of a surgical access based on the Single Flap Approach (SFA; Trombelli et al. 2007) and the application of a gel containing hyaluronic acid and polynucleotides (HA+PN) in the treatment of periodontal pockets associated with a supraosseous defect (SD) in an esthetically-sensitive area.

Methods: following step I and II of periodontitis therapy, a diabetic (last glycated hemoglobin: 7.5%), non-smoking, 52-year-old male patient affected by stage III grade C periodontitis presented persisting 6-mm deep, interproximal periodontal pockets positive to bleeding on probing (BoP) in association with a SD in the 1.2-1.3 region. The gingival margin was exposed when the patient smiled. A buccal mucoperiosteal envelope flap was raised according to the principles of the SFA. After root debridement, a minimal (1 mm) intrabony component of the defect was confirmed. A HA+PN gel was applied onto the

exposed root surfaces, and the flap was repositioned with internal mattress, resorbable sutures. A second gel application was used onto the incision margin and the supragingival root surfaces. For 2 weeks, the patient rinsed with a 0.20% chlorhexidine solution. Professional supragingival debridement was performed at 1, 2, 3, and 6 months.

Results: postoperative healing was uneventful. At 2 weeks, primary closure was maintained, and no fibrin line was observed at the incision margin. At 6 months, all interproximal sites facing the SD showed a PD of 4 mm, and only the two palatal sites were still BoP-positive. A 1-mm recession of the buccal gingival margin was observed at both teeth adjacent to the SD.

Conclusions: the combination of SFA and HA+PN gel was effective in eliminating deep pockets and reducing BoP at a SD site, with limited (but clinically relevant) esthetic impact. The adjunctive efficacy HA+PN gel remains to be established.

ADDITIONAL EFFECT OF A NOVEL MUCOADHESIVE POLYMERIC HYDROGEL IN NON-SURGICAL PERIODONTAL THERAPY: A RETROSPECTIVE ANALYSIS

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Aim: to evaluate the additional clinical efficacy of a novel mucoadhesive polymeric hydrogel when used as an adjunct to non-surgical periodontal therapy in patients with periodontitis.

Methods: a retrospective study was conducted on patients affected by periodontitis treated with non-surgical periodontal therapy. Clinical parameters, including probing pocket depth (PPD), clinical attachment level (CAL), and bleeding on probing (BOP), were recorded at baseline and after 24 weeks. The hydrogel was applied as an adjunctive local therapy following scaling and root planing. Changes in clinical parameters and pocket closure rates were analyzed over time.

Results: a significant reduction in PPD and improvement in CAL were observed at 24 weeks compared to baseline. A decrease in BOP was also recorded, indicating reduced inflammation. Sites treated with the adjunctive hydrogel showed higher rates of pocket closure (<5 mm) and greater clinical improvement compared to expected outcomes from non-surgical therapy alone.

Conclusions: the adjunctive use of a mucoadhesive polymeric hydrogel appears to enhance the clinical outcomes of non-surgical periodontal therapy, improving periodontal parameters and promoting pocket closure. These findings suggest its potential as a supportive therapeutic strategy in the management of periodontitis.

ROOT RESECTION OF VITAL MOLARS AFFECTED BY PERIODONTITIS: A RETROSPECTIVE STUDY

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Aim: this retrospective study evaluates Vital Root Resection (VRR) as a therapeutic alternative for maxillary molars with Grade II or III furcation involvement. The protocol focuses on root resection while preserving pulp vitality through a single-session, minimally invasive approach designed to reduce postoperative morbidity and operative time.

Methods: 15 maxillary molars were treated in 13 patients (including 3 smokers, age range: 23-69), with a follow-up of up to 3 years. The procedure combined minimally invasive pulp therapy and root resection, performed with or without a surgical flap. Biodentine and NeoPutty were used as bioactive materials.

Results: the sample included 11 first molars and 4 second mo-

lars. Resections involved 12 disto-buccal, 2 palatal, and 1 mesio-buccal root. Follow-up (6-36 months) showed the permanence of all 15 teeth with all elements demonstrating clinical and radiographic stability. Key parameters are PPD, BoP, PI and Gingival Recession showed significant improvement compared to baseline. No prosthetic rehabilitation was necessary, and only one case required subsequent endodontic treatment.

Conclusions: vital root resection achieved a 94% success rate. Clinical and radiographic outcomes confirmed improved periodontal stability. This minimally invasive protocol effectively reduces the need for conventional endodontic treatment and complex prosthetic interventions.

DEVELOPMENT OF A MULTIVARIABLE PROGNOSTIC MODEL FOR TOOTH SURVIVAL AND ITS IMPLEMENTATION IN A CLINICAL DECISION-SUPPORT MOBILE APPLICATION: A RETROSPECTIVE COHORT STUDY

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Aim: tooth prognosis assessment is a key step in treatment planning. However, the integration of multiple clinical and radiographic parameters influencing tooth survival can be challenging in daily practice. The aim of this study is to develop a digital application capable of estimating tooth prognosis based on relevant clinical parameters.

Methods: a retrospective study was conducted based on the analysis of clinical records of patients treated at Ospedale Maggiore (Trieste). Teeth with complete periodontal records and radiographic documentation and a minimum follow-up of 1 year were included. For each tooth, several prognostic variables were recorded, including furcation involvement, bleeding on probing, bone loss, presence of endodontic lesions or prosthetic crowns and patient-related factors. The primary out-

come was tooth survival or extraction during follow-ups. The collected data were used to develop a prognostic model, which subsequently served as the basis for the design of a prototype digital application.

Results: a total of 140 patients were included in the analysis. Several clinical variables showed a significant association with tooth survival. The predictive model derived from the dataset allowed the development of a preliminary algorithm capable of stratifying teeth into different prognostic categories.

Conclusions: the proposed model and its implementation in a digital application may represent a useful clinical decision-support tool for the assessment of tooth prognosis, facilitating a more systematic and objective evaluation during treatment planning.

SIGNATURE OF THE LINGUAL MUCOSAL MICROBIOTA IN PERIODONTOPATHIC PATIENTS WITH CARDIOVASCULAR DISEASES: A PILOT STUDY

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Aim: the lingual mucosal microbiota (LMM) represents a relevant but underexplored microbial niche with potential systemic impact to different pathological conditions.

This study aimed to characterize the bacterial composition of the lingual mucosa in patients with periodontal disease and to evaluate associations between microbial profiles and cardiovascular disease (CVD).

Methods: a case-control study was conducted in 20 subjects with periodontal disease divided into two subgroups including patients with cardiovascular (n = 12) disease and without (n = 8). Lingual mucosal samples were collected and analyzed by 16S rRNA gene-based sequencing. LMM of two subgroups were analyzed.

Results: both subgroups showed similar dominant bacterial families, including *Lachnospiraceae*, *Peptostreptococcaceae*,

and *Bifidobacteriaceae*, however, lingual microbiome of subjects with cardiovascular disease was characterized by a different bacterial diversity (PERMANOVA on weighted and unweighted UniFrac Pr (> F) = 0.001. Controls showed higher abundance of commensal *Streptococcaceae*, while *Enterococcaceae* were detected only in CVD patients. At species level, *S. salivarius*, *S. oralis*, and *Lactobacillus paracasei* were more abundant in controls, whereas *Enterococcus faecalis* was enriched in CVD patients.

Conclusions: patients with CVD exhibit a distinct lingual microbiota, characterized by reduced commensal bacteria and increased opportunistic pathogens. These findings suggest a potential oral-systemic link and indicate the lingual microbiota as a possible non-invasive biomarker for cardiovascular risk.

THE IMPACT OF PERIODONTAL INFLAMMATION ON THE CLINICAL COURSE OF INFLAMMATORY BOWEL DISEASE: A COHORT STUDY

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Aim: to assess whether a poor periodontal status is associated with an increased risk of clinical worsening of inflammatory bowel diseases (IBD) over time, exploring the prognostic role of the “gum-gut axis”.

Methods: a longitudinal cohort study including 256 adults with Crohn's disease or ulcerative colitis was conducted. Periodontal inflammation was assessed using CDC/AAP criteria, pathological pocket counts (PPD ≥ 4 and ≥ 6 mm), and PISA score, through a comprehensive periodontal examination. The primary outcome was one or more IBD worsening events (steroids, therapy changes, hospitalization, or surgery). Associations were analyzed with multivariate logistic regression and Cox models.

Results: over 2.3 ± 0.7 years of follow up, 105 (41%) of 256 IBD patients worsened. PISA was higher in worsened vs stable pa-

tients (673.9 vs 189.9 mm²; p < 0.0001). High PISA conferred ~8-fold higher risk (HR 8.33; p < 0.001). Deep pockets (≥ 6 mm) were also associated with an increased risk of IBD worsening. PISA above median was the strongest predictor (OR 26.7), along with budesonide use (OR 5.51) and prior stoma/colectomy (OR 2.43). Older age and baseline remission were protective factors.

Conclusions: severe periodontal inflammation, measured by PISA and pathological pockets, is significantly associated with higher risk of IBD worsening. PISA is a reliable marker of systemic inflammation and a potential predictor of unfavorable intestinal disease progression, supporting routine oral health assessment and inclusion of periodontal care in personalized IBD management to improve disease outcomes.

PERIODONTAL CONDITIONS AND SUPRAGINGIVAL DENTAL BIOFILM DEPOSITS IN A COHORT OF PEDIATRIC PATIENTS FROM FAMILIES WITH LOW-INCOME REFERRED TO A PUBLIC ORAL HEALTH SERVICE

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Aim: to evaluate the periodontal status and amount of supragingival biofilm in pediatric patients, with emphasis on differences among subgroups aged ≤ 6 years (early childhood; EC), >6 and <11 years (middle childhood; MC), and ≥ 11 years (early adolescence; EA).

Methods: this prospective cohort study was conducted at the Operative Unit of Dentistry of the Azienda Unità Sanitaria Locale (AUSL) of Ferrara, Italy, within a program specifically dedicated to pediatric patients from low-income families. Each patient underwent a comprehensive full-mouth periodontal examination, including assessment of clinical attachment level (CAL) and bleeding on probing (Lang *et al.*, 1986) at six sites per tooth. Based on CAL and full-mouth BoP score (FMBS), diagnoses of periodontal health (H), dental biofilm-induced gingivitis (G), or periodontitis were established according to the World Workshop case definitions (Chapple *et al.*, 2018; Papanou *et al.*, 2018). G cases were further classified by extent

(Chapple *et al.*, 2018). Dental biofilm accumulation was quantified using the Full-Mouth Plaque Score (FMPS).

Results: a total of 1235 systemically healthy patients (313 EC, 593 MC, and 329 EA) were included. The prevalence of H and G was 82.4% and 17.6%, respectively, in EC; 62.7% and 37.3% in MC; and 49.2% and 50.8% in EA. The mean ($\pm$ standard deviation) FMBS was $5.5 \pm 6.45\%$ in EC, $9.2 \pm 8.93\%$ in MC, and $12.6 \pm 10.92\%$ in EA. Among G cases, the prevalence of localized and generalized G was 94.6% and 5.4% in EC, 91.4% and 8.6% in MC, and 85.3% and 14.7% in EA, respectively. In both localized and generalized G, FMPS $>60\%$ was significantly associated with higher FMBS compared with FMPS $<30\%$ or 31-60%.

Conclusions: G is highly prevalent in pediatric patients. The transition from deciduous to permanent dentition across EC, MC, and EA is associated with an increase in its prevalence and extent.

PERIODONTITIS-RELATED ORAL AND GUT MICROBIOME: A SHOTGUN METAGENOMIC ANALYSIS

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Aim: to explore the oral-gut microbiome associated with periodontitis and health across multiple biological specimens through a metagenomic approach.

Methods: subgingival plaque, saliva, and plaque samples were collected from patients ($n = 48$) affected by generalized stage III/IV periodontitis and age- and gender-matched periodontally healthy controls ($n = 46$). The cohort was further stratified into Healthy ($n = 25$), Gingivitis ($n = 21$), Periodontitis Stage III ($n = 28$) and Periodontitis Stage IV ($n = 29$) groups. Subgingival plaque, saliva, and stool samples were collected and analyzed through whole-genome sequencing with a shotgun metagenomic technique. Differential abundance analysis was carried out using Lefse (v1.1.2), to detect microbial taxa that were significantly associated with the clinical condition.

Results: distinct microbial signatures were observed across plaque, saliva, and gut microbiomes, with notable shifts according to disease severity. In subgingival plaque, periodontitis groups showed enrichment of known pathobionts like *Porphyromonas gingivalis*, *Tannerella forsythia*, and *Fusobacterium nucleatum*, while Healthy controls were characterized by *Arachnia rubra* and *Streptococcus sanguinis*. Salivary microbiome also showed differences with a higher presence of *F. nucleatum* in periodontitis. Gut microbiome analysis did not detect any periodontal pathogens in the stool samples.

Conclusions: the use of a high-resolution shotgun metagenomic approach provided detailed insights into species-level differences, reinforcing the role of well-known pathobionts in periodontitis and highlighting novel microbial associations across different body sites.

BLEEDING ON PROBING IN THE PEDIATRIC POPULATION: A MULTIVARIATE ANALYSIS OF ASSOCIATED FACTORS IN A PROSPECTIVE COHORT REFERRED TO A PUBLIC ORAL HEALTH SERVICE

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Aim: to evaluate whether and to what extent the full-mouth prevalence of bleeding on probing (BoP score) is influenced by patient-related factors in pediatric patients.

Methods: data were derived from a prospective cohort study conducted at the Operative Unit of Dentistry of the Azienda Unità Sanitaria Locale (AUSL) of Ferrara, Italy, within a program specifically dedicated to patients ≤14 years old from low-income families. Each patient underwent a comprehensive full-mouth periodontal examination, including BoP assessment (Lang *et al.*, 1986) at six sites per tooth. Patient-related factors including age, biological sex, body mass index (BMI), full-mouth plaque score (FMPS), and caries risk (American Dental Association Caries Risk Assessment, CRA-ADA), were independently evaluated for their association with the BoP score. A multiple linear regression analysis was then performed, using the significant factors as independent vari-

ables and the BoP score as a dependent variable.

Results: a total of 1235 systemically healthy patients were included in the analysis. All patients had an intact periodontium. When evaluated separately, the following factors were significantly associated with the BoP score: age ($p < 0.0001$), BMI ($p = 0.0024$), FMPS ($p < 0.0001$), and CRA-ADA ($p = 0.0004$). Males and females did not differ significantly in BoP scores, but they differed in age ($p = 0.0143$). Therefore, all factors were retained in the multivariate analysis. In the multiple regression model, BMI lost statistical significance, whereas the other four variables remained significant. Specifically, female sex showed a protective effect, while age, FMPS, and CRA-ADA were positively associated with the BoP score.

Conclusions: in pediatric patients with an intact periodontium, BoP score is higher in males and positively associated with age, FMPS, and caries risk.

EFFECT OF NON-SURGICAL PERIODONTAL THERAPY ON HEMODYNAMIC PARAMETERS IN SUPINE AND ORTHOSTATIC POSITIONS AND ON ORAL INFLAMMATION: A CLINICAL STUDY

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Aim: periodontitis is a chronic inflammatory disease associated with systemic inflammation and endothelial dysfunction through mediators such as IL-6 and TNF- α . These mechanisms may impair autonomic cardiovascular regulation. Postural adaptation from clinostatism to orthostatism represents a sensitive indicator of neurovegetative balance and baroreflex function. The present study aims to evaluate the impact of stage III-IV periodontitis on cardiovascular postural adaptation and to assess whether non-surgical periodontal therapy (NSPT) improves orthostatic hemodynamic response.

Materials and methods: this prospective interventional study includes 40 adults (20 with stage III-IV periodontitis and 20 matched healthy controls). Periodontal parameters (FMPS, FMBS) and cardiovascular variables (SBP, DBP, HR) are recorded

in supine position and at 1 and 3 minutes after standing. In periodontitis patients, measurements are performed at baseline and 7-14 days after NSPT. Orthostatic changes are calculated as the difference between standing and supine values. Statistical analyses assess intergroup differences and correlations between periodontal and cardiovascular parameters.

Results: data collection is ongoing. It is hypothesized that periodontitis patients will show greater orthostatic increases in SBP and HR compared to controls, and that NSPT will reduce these alterations.

Conclusions: NSPT may improve autonomic cardiovascular regulation by reducing oral inflammation, supporting periodontitis as a modifiable cardiovascular risk factor and highlighting the link between oral and systemic health.

SEX AS A DOMINANT DETERMINANT OVER TRADITIONAL GRADING MODIFIERS IN PERIODONTITIS: A NATIONWIDE MULTILEVEL ANALYSIS

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Aim: the study aims to evaluate the association between biological sex (exposure) and periodontitis prevalence among U.S. adults compared to conventional grading modifiers (namely, smoke and Hb1Ac) and host age.

Methods: we analyzed data from the National Health and Nutrition Examination Survey (NHANES) 2009-2014, restricted to dentate adults (≥ 30 years) undergoing full-mouth periodontal examinations (6 sites/tooth). A multilevel Binomial Generalized Additive Model (GAM) with a logit link was used to model periodontitis probability in multilevel fashion. The model employed thin-plate regression splines to capture non-linear age effects by sex, adjusting for major confounders and applying survey weights.

Results: biological sex emerged as a primary determinant of disease status; females exhibited 52% lower odds of perio-

dontitis prevalence ($p < 0.001$) compared to males. While current smoking emerged as a robust risk factor (OR = 1.36; 95% CI 1.23-1.52), Hb1Ac showed only a marginal association (OR = 1.06; 95% CI 1.02-1.10).

Predicted risk increased progressively with age until approximately 60-65 years before declining, a trend potentially driven by immunosenescence. Notably, the male-female "sex gap" remained persistent and stable across the study period.

Conclusions: biological sex outweighs conventional grade modifiers like smoking and Hb1Ac for the prevalence of periodontitis in our setting. This disparity likely stems from a combination of biological susceptibility and less favorable oral health behaviors in men, highlighting the need for sex-specific preventive strategies.

PERIODONTAL SCREENING IN PATIENTS AT RISK OR DIAGNOSED WITH MEDICATION-RELATED OSTEONECROSIS OF THE JAW (MRONJ): A CROSS-SECTIONAL STUDY

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Aim: consensus has yet to be reached about the prevention and treatment of medication-related osteonecrosis of the jaw (MRONJ), a complication of antiresorptive and other medications. Several studies have investigated the relationship between periodontal disease and MRONJ. Periodontitis is a chronic condition characterized by host-mediated microbial inflammation resulting in loss of periodontal attachment.

Methods: a cross-sectional, descriptive, analytical study was conducted to determine the stage and grade of periodontitis, according to the 2017 EFP-AAP classification, in patients receiving antiresorptive drugs at the Dental Clinic of Magna Graecia University of Catanzaro. Data collected included records, clinical photographs, periapical radiographs, and periodontal measures (CAL, BOP, PPD, PI).

Results: sixteen patients (13 females, 3 males; aged 47-85) under treatment or with a history of MRONJ-related drug therapy were selected. Four presented stage IV grade C periodontitis, 2 stage IV grade B, 1 stage III grade C, 4 stage III grade B, 1 stage II grade B, and 2 grade A. One patient had localized gingivitis, and one was in periodontal health. Statistical analysis revealed that 87.5% of patients presented periodontal disease.

Conclusions: limited scientific evidence prevents definitive conclusions. However, within the limits of this study, periodontal screening for patients undergoing MRONJ-related drug therapy is recommended to support appropriate multidisciplinary management.

INTERDENTAL BRUSHING BEHAVIOUR IN ADULTS: INFLUENCE OF PERIODONTAL STATUS AND SOCIOECONOMIC FACTORS

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Aim: to evaluate patterns of interdental brush use across different stages and grades of periodontitis and to examine associations with socioeconomic, demographic, and behavioural factors.

Methods: this cross-sectional study included 375 adults referred for secondary periodontal care at Guy's and St Thomas' Hospital (London, UK). Periodontal status was classified using the 2018 periodontal classification. Participants completed a 10-item questionnaire on IB use and perceived barriers. Area-level household income was estimated using post-code-linked national statistics. Associations were analysed using chi-squared tests and multivariable logistic and ordinal regression models.

Results: daily IB use (63.0%) was significantly associated with

periodontitis stage ($p < 0.001$) but not grade. Patients with Stage III-IV periodontitis had higher odds of daily IB use (OR = 3.11, 95% CI 1.88-5.15, $p < 0.001$). Higher income and older age were positively associated with IB use, while current smoking was a strong negative predictor (OR = 0.31, 95% CI 0.15-0.67). Common barriers included pain, discomfort, and cost.

Conclusions: a distinct profile of periodontal patients who are less likely to use interdental brushes regularly was characterised by early-stage disease, younger age, lower income, and current smoking status. Dissatisfaction driven by practical, financial, and environmental concerns highlights the need for tailored preventive advice and personalised interdental cleaning strategies to improve adherence.

ASSOCIATION BETWEEN RESTING VESTIBULAR PRESSURE AND GINGIVAL BIOTYPE IN NATURAL TEETH: A CROSS-SECTIONAL OBSERVATIONAL STUDY

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Aim: building on the "suction chamber" hypothesis, this study aimed to investigate the potential correlation between resting negative vestibular pressure and gingival biotype (thick vs thin) in natural teeth, exploring a possible physiological mechanism influencing gingival thickness.

Methods: eleven healthy adults underwent vestibular pressure measurements in anterior and posterior regions using a communicating vessels manometer. Gingival biotype was assessed at the maxillary right central incisor using the periodontal probe transparency method. Data analysis included Mann-Whitney U tests and rank-biserial correlation.

Results: a statistically significant difference in pressure distribution was found between subjects with thick and thin gingival biotypes ($p < 0.001$). In particular, individuals with a thick

biotype exhibited a more negative mean pressure (-3.11 mmHg) compared to those with a thin biotype (-2.39 mmHg). A medium effect size for this association was observed in the overall and anterior region data, and a small effect in the posterior region.

Conclusions: a significant correlation appears to exist between more negative resting vestibular pressure and a thick gingival biotype. This finding suggests that chronic, mild negative pressure may actively contribute to gingival phenotype development, in relation to the emergence profile. In other words, tooth emergence profile thickness may modulate the effect of vestibular pressure on gingival tissue, creating a more or less pronounced "suction chamber", potentially leading to differences in gingival thickness.

ANALYSIS OF ORAL SOFT TISSUE GRAFTS: COMPARATIVE STUDY OF PALATAL, RUGAE, AND MAXILLARY TUBerosITY DONOR SITES

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Aim: this study evaluates and compares the histological and histomorphometric characteristics of soft tissue grafts harvested from three intraoral sites: the hard palate, maxillary tuberosity, and palatal rugae. The goal is to identify site-specific features that influence graft structural properties and clinical integration potential.

Methods: fifty tissue samples from 25 patients requiring soft tissue augmentation were analyzed. Grafts were fixed in Karnovsky's solution and stained with hematoxylin and eosin. Histomorphometric analysis used NIS-Elements software to measure epithelial height, total graft height, and the perimeter of epithelial-connective interdigitations. Statistical analysis was performed via ANOVA and Kruskal-Wallis tests ($p < 0.05$) to evaluate site-specific variations.

Results: tuberosity grafts demonstrated greater overall thickness, higher density and complexity of epithelial-connective interdigitations, and increased vascular potential. Palatal grafts showed lower morphometric values but greater dimensional stability, while rugae-derived grafts exhibited the highest epithelial proliferative index. Across all samples, incomplete de-epithelialization was consistently observed, indicating the persistence of residual epithelial components within the grafts.

Conclusions: graft characteristics are strictly site-dependent. Selection should be tailored to clinical goals: tuberosity grafts are associated with a tendency toward volumetric increase, whereas palatal grafts display long-term stability.

DENTAL PULP AND PERIODONTAL LIGAMENT STEM CELLS FROM THE SAME DONOR: A COMPARATIVE GENOME ANALYSIS

Rajab Bacha H

Objective: Periodontal ligament stem cells (PDLSCs) and dental pulp stem cells (DPSCs) are mesenchymal stem cells with multilineage differentiation potential, widely studied in dental regeneration. As they originate from different tooth compartments, genomic differences are expected, though data are limited. This study investigated differential gene expression between paired healthy PDLSCs and DPSCs from the same tooth.

Materials and methods: total RNA from PDLSCs and DPSCs was extracted, libraries prepared and sequenced using Illumina NovaSeq X Plus. Reads were preprocessed and aligned to the human genome (STAR v2.7.9a), with a mean mapping rate of 89%. Functional enrichment was analyzed using Gene Ontology (GO).

Results: a total of 1,905 differentially expressed genes were identified in DPSCs vs PDLSCs. Enrichment analysis (Reactome, GO) showed differences in pathways related to extracellular matrix organization, neuronal processes, interleukin signaling, and IGF regulation. Key molecular functions included extracellular matrix and growth factor binding. Main biological processes involved extracellular structure organization and development pathways. Cellular components included collagen-containing matrix and membrane domains.

Conclusions: these findings reveal significant molecular differences between DPSCs and PDLSCs, suggesting that anatomical origin influences their phenotype and behavior, which is important for selecting stem cells in regenerative applications.

QUANTITATIVE SEM ANALYSIS OF FIBROBLAST PROLIFERATION ON CUSTOMIZED TITANIUM MESHES IN EARLY WOUND HEALING: INFLUENCE OF SURFACE TREATMENTS FOR GUIDED BONE REGENERATION

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Aim: to quantitatively evaluate fibroblast adhesion and proliferation on customized titanium meshes with different surface treatments using scanning electron microscopy (SEM), focusing on the early phase of surgical wound healing in a guided bone regeneration (GBR) model.

Materials and methods: six titanium alloy surface conditions were tested: electropolished, sandblasted, and both combined with gold or pink anodization. Human fibroblasts were cultured on each surface in co-culture with THP-1-derived macrophages to simulate the early healing environment. SEM analysis was performed at $\times 200$ magnification after 48 hours and 7 days. Ten random fields per sample were acquired. Fibroblasts were independently counted by two blinded operators, and results were expressed as mean cell number per field.

Results: all surfaces supported fibroblast adhesion, confirming biocompatibility. Electropolished surfaces showed higher cell counts than sandblasted ones at both time points. At 48 hours, values ranged from 3.75 ± 0.06 cells/field in sandblasted surfaces to 19.65 ± 0.30 in electropolished gold-anodized samples. At 7 days, proliferation increased in all groups, with the highest values in electropolished anodized surfaces (52.2 ± 0.81 and 50.55 ± 1.08 cells/field) and the lowest in sandblasted samples (8.95 ± 0.15). Intermediate values were observed in the remaining groups.

Conclusions: surface treatment significantly affects fibroblast proliferation during early wound healing. Electropolished and anodized surfaces appear more favorable for cell growth, potentially supporting soft tissue stabilization and improving GBR outcomes.

THE ROLE OF RESIDUAL PERIODONTAL POCKETS AT IMPLANT PLACEMENT AS A RISK INDICATOR FOR PERI-IMPLANTITIS: SYSTEMATIC REVIEW AND META-ANALYSIS

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Aim: periodontitis represents a risk factor for peri-implantitis (PI). Most studies and reviews have assessed periodontitis in terms of patient history or periodontal status at the time of PI diagnosis, while less attention has been given to the persistence of residual pockets (RP) or furcation involvement (FI) at the time of implant placement. This systematic review aimed to assess whether the presence of RP or FI after active periodontal therapy increases the risk of PI in patients with treated periodontitis.

Methods: an electronic search was performed to address the PICO question: "in patients with treated periodontitis receiving at least one dental implant, do RP and/or FI at the time of implant placement pose a higher risk of developing PI compared with subjects with stable periodontitis or periodontal health?".

Results: from 3870 records, 5 studies met the inclusion criteria, with follow-up ranging from 1 to 23 years (915 implants in 362 patients) and 3 were included in the quantitative synthesis. All studies evaluated RP, while none analyzed FI. Patients with RP at the time of implant placement showed a significantly higher risk of PI (OR = 3.28; 95% CI: 1.18-9.10). Across individual studies, RP ≥ 5 mm or ≥ 6 mm were consistently associated with increased incidence of PI.

Conclusions: RP persisting after active periodontal therapy, especially in teeth adjacent to implants, are associated with a significantly higher incidence of PI during follow-up. No data are available regarding the persistence of FI as risk factor for PI. Achieving periodontal stability before implant placement should be prioritized.

EFFECTIVENESS OF PURE PLATELET-RICH FIBRIN IN ALVEOLAR RIDGE PRESERVATION AFTER TOOTH EXTRACTION: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

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Aim: to evaluate the effectiveness of pure platelet-rich fibrin (PRF) in alveolar ridge preservation after tooth extraction, compared with spontaneous healing or other preservation approaches.

Methods: a systematic review of randomised controlled trials was conducted according to PRISMA 2020 and registered in PROSPERO. PubMed/MEDLINE, Scopus, ScienceDirect and CENTRAL were searched. Adult extraction-socket studies using pure PRF (L-PRF, A-PRF, T-PRF, i-PRF) with ≥ 3 months' follow-up were included. Quantitative synthesis was performed for comparable horizontal dimensional outcomes at 1, 3 and 5 mm below the crest using mean difference (MD) and 95% confidence intervals (CI).

Results: ten RCTs were included qualitatively (332 patients; 477 sockets), and four RCTs were meta-analysed. PRF signifi-

cantly reduced horizontal ridge loss at 1 mm (MD -0.80 mm, 95% CI -1.22 to -0.37; $p = 0.0003$; $I^2 = 77\%$) and 3 mm (MD -0.50 mm, 95% CI -0.84 to -0.16; $p = 0.004$; $I^2 = 49\%$), whereas no significant effect was found at 5 mm (MD -0.17 mm, 95% CI -0.39 to 0.04; $p = 0.12$; $I^2 = 0\%$). Qualitative synthesis showed inconsistent vertical findings, but histomorphometric outcomes more often favoured PRF, with greater newly formed/vital bone and less early postoperative pain.

Conclusions: pure PRF may provide a modest benefit in limiting coronal horizontal ridge resorption and may enhance biological healing, but its effect on overall dimensional preservation remains inconsistent. PRF appears promising as a biological adjunct, whereas graft-based materials remain more predictable for structural preservation.

ARTIFICIAL INTELLIGENCE IN THE DENTAL OFFICE: OPTIMIZING TREATMENTS AND ORAL TISSUE HEALTH

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Aim: evaluate the role of AI in dentistry and dental hygiene to enhance diagnostic accuracy and detect oral tissue alterations invisible to the human eye.

Methods: a systematic literature review was conducted on the clinical applications of AI in dentistry. The analysis focused on machine learning algorithms trained on millions of annotated diagnostic images, evaluating their performance across three core tasks: classification, localization, and segmentation of oral structures. Special attention was given to the ability of these systems to recognize complex textural patterns in radiographic and clinical imagery.

Results: AI demonstrates superior accuracy in detecting micro-variations that are visually imperceptible, overcoming observer bias and visual fatigue. In periodontology, algorithms

excel at measuring the millimetric CEJ-alveolar crest distance, reliably detecting early bone loss before it becomes clinically evident. Further applications include incipient caries, root micro-fractures, and early periodontal ligament widening — establishing AI as a powerful digital second opinion alongside the clinician.

Conclusions: artificial Intelligence marks a turning point in dental diagnostic imaging. Its ability to map lesion margins and complex anatomical structures with millimetric precision opens new frontiers in clinical practice. Most notably, it lays the groundwork for a precision periodontology that integrates objective, data-driven analysis with traditional clinical judgment — making diagnosis more reliable, reproducible, and independent of operator experience.

EFFICACY OF PERIODONTAL REGENERATIVE THERAPIES: A SYSTEMATIC REVIEW AND SEQUENTIAL NETWORK META-ANALYSIS

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Aim: Guided tissue regeneration (GTR) and enamel matrix derivative (EMD) are two periodontal regenerative therapies. Both have been used either alone or in combination with other regenerative or reconstructive materials. A network meta-analysis (NMA) of randomized controlled trials (RCTs) was performed to comparatively evaluate the effects of GTR, EMD, and their combination therapies in the treatment of intraosseous defects.

Materials and methods: a systematic literature search was conducted in the PubMed, EMBASE, LILACS, Google Scholar, and CENTRAL databases for parallel-arm or split-mouth RCTs published up to 15 December 2025. An NMA was performed to compare the short-term effects (1-year post-surgery or the closest available follow-up beyond 1 year) of GTR, EMD, and their combination therapies on probing pocket depth (PPD) and clinical attachment level (CAL) in defects with an intrabony component depth ≥ 3 mm. A sequential

NMA (SNMA) was also applied to control the type I error rate due to multiple testing.

Results: sixty-seven studies were included in the analysis and provided data on PPD and CAL. Regenerative therapies achieved significantly greater PPD reduction and CAL gain compared with access flap (AF).

Based on the cumulative ranking probability curves for PPD reduction, P-scores indicated that GTR was the most effective treatment (0.77), followed by GTR + platelet-rich plasma (PRP) + bone graft (BG) (0.70), GTR + EMD (0.69), GTR + BG (0.51), EMD + BG (0.47), EMD + PRP + BG (0.46), EMD alone (0.37), and AF (0.02). For CAL gain, GTR + EMD showed the highest probability of ranking first among all available treatment options.

Conclusions: among treatment options based on GTR and/or EMD for intraosseous defects, GTR + EMD and GTR alone appear to be the most effective approaches for CAL gain and PPD reduction, respectively.

DEEP LEARNING-BASED DETECTION OF PERIODONTAL INFRABONY AND FURCATION DEFECTS ON PERIAPICAL RADIOGRAPHS

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Aim: to evaluate feasibility and performance of an artificial intelligence (AI)-based detection model for the radiographic detection and classification of periodontal bony defects on periapical radiographs, in order to support diagnosis in periodontology.

Methods: a total of 7464 periapical radiographs were retrospectively collected from the clinical archive of the University Hospital of Cagliari. After expert annotation, 581 images containing at least 1 periodontal osseous defect were included. Defects were categorised into 4 types: 1-wall defects, 2+-wall defects, crater-like defects, and furcation involvements. A YOLOv8 larg object detection model was trained using a patient-independent split (406 training, 58 validations, 117 testing images). Performance was assessed using mean Average

Precision (mAP) at IoU thresholds of 0.5 and 0.5:0.95, as well as class-wise precision and recall

Results: the model achieved an overall precision of 0.592, recall of 0.435, and mAP@0.5 of 0.504. Furcation involvements showed the highest precision (0.669) and mAP@0.5 (0.577), followed by crater-like defects and 2+-wall defects. One-wall defects were the most difficult to detect. Qualitative analysis showed that smaller or radiographically ambiguous defects were more frequently missed

Conclusions: AI-assisted object detection demonstrated the feasibility of classifying periodontal osseous defects on periapical radiographs, although performance remains limited. Despite the constraints related to dataset imbalance such models may improve diagnostic consistency and support treatment planning.

SALIVARY BIOMARKER ANALYSIS TO DISTINGUISH PERIODONTAL HEALTH FROM DISEASE

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Aim: this study aims to develop a salivary biomarker panel to support the early and objective diagnosis of periodontitis (PRD) and to evaluate its relationship with changes in clinical periodontal parameters following non-surgical treatment.

Methods: salivary samples were collected from 36 systemically healthy subjects: 16 without gingivitis/periodontitis (G1) and 10 with severe PRD (G2). Samples were collected at baseline (T0) in both groups and 6 months after non-surgical periodontal therapy (NSPT) in G2 (T1). Proteomic profiles, cytokine expression, matrix metalloproteinase-8 (MMP-8), cf-mtDNA, and bacterial DNA were analyzed.

Results: proteomic analysis identified more than 60 differentially expressed proteins in G1 and G2 -T0, mainly involved in inflammation, immune response, oxidative stress, and extra-

cellular matrix degradation. These proteins decreased after NSPT. MMP-8, IL-1 β , IL-4, IL-8, and IL-10 were identified as discriminating between G1 and G2-T0. MMP-8 also distinguished G2-T0 from G2-T1. IL-8 differentiated G1 and G2-T1. cf-mtDNA was elevated in periodontitis and decreased after NSPT, reaching levels similar to controls. Bacterial DNA was also increased in G2 and reduced after therapy, although not significantly.

Conclusions: salivary proteomics revealed a disease-specific signature in PRD. Expression of salivary markers after NSPT was similar to that of healthy subjects, even if not completely overlapping with that of controls. Specific salivary biomarkers emerged as key discriminative factors among periodontal health, PRD, and treated PRD.

SALIVARY IL-1 β AND TGF- β 1 AS NON-INVASIVE LINKING BIOMARKERS IN PSORIASIS AND PERIODONTITIS: MODULATION OF INFLAMMATORY RESPONSE THROUGH TNF- α INHIBITION

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Aim: the study evaluated the salivary inflammatory profile of psoriatic patients according to their periodontal status and systemic psoriasis treatments.

Methods: the study included patients with moderate/severe psoriasis, naïve to TNF- α inhibitors and cyclosporine, who had interrupted conventional psoriatic therapies at least 4 weeks prior (T24) the beginning of the study. Age and gender-matched healthy subjects were enrolled as control groups. Dermatological and stomatological examination and non-surgical periodontal treatment were performed. Four weeks later, periodontal revaluation and unstimulated whole salivary sample was collected from each patient by Salivette® method. The salivary cytokine concentration was analyzed by multianalytical ELISAarray™ Kit (Qiagen).

Results: ninety psoriatic patients and ten healthy subjects were enrolled in the study. At baseline, IL-1 β and TGF- β 1 levels were significantly higher in psoriatic patients compared with controls. Psoriatic patients with periodontitis showed significantly higher levels of IL-1 β and TGF- β 1 compared to patients without periodontitis. Despite treatment-related reduction, at T24, only patients treated by TNF- α inhibitors showed a significant reduction of IL-1 β and TGF- β 1 levels.

Conclusions: the dysregulation of the immune system is now recognized as a critical event in the pathogenesis of both psoriasis and periodontitis. Salivary IL-1 β and TGF- β 1 levels and the modulation with TNF- α inhibitors resulted as strong and accurate biomarkers. Saliva could be integrated into multidisciplinary management as a simple and non-invasive diagnostic tool.

WHAT ULTRASONOGRAPHIC CHANGES ARE ASSOCIATED WITH GINGIVITIS RESOLUTION? PRELIMINARY RESULTS

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Aims: gingivitis is primarily related to plaque accumulation causing the development of inflammation. The aim of the present study was to evaluate the ultrasonographic changes observed in the course of gingivitis and after its resolution, to assess the impact of inflammation of gingival structure and vascularization.

Methods: patients with gingivitis were enrolled. All patients underwent ultra-high frequency ultrasonographic scans (70 MHz) of gingival tissue on three areas per dental arch (anterior, middle right, middle left). Gingival thickness, echogenicity, and vascularization assessed through resistive index were evaluated. Patients were then treated for gingivitis and re-assessed at 1 month, both clinically and with ultrasonography.

Results: twenty patients were enrolled. In the presence of gingivitis, significantly reduced gingival thickness ($p < 0.05$) and echogenicity ($p < 0.001$) were noted, along with an overall increase in Doppler parameters. At 1-month follow-up, normalization of vascular parameters was observed, along with a significant increase in echogenicity ($p < 0.05$). Gingival thickness moderately increased but in the lack of statistical significance. The magnitude of the improvement was significantly related to the decrease in clinical parameters of full mouth bleeding score and plaque score.

Conclusions: ultrasonography is a valuable tool to assess structural modifications occurring in gingivitis. These results provide the benchmark for further assessment on a larger sample.

THE IMPACT OF DIFFERENT TIMEFRAMES OF RE-EVALUATION AFTER NON-SURGICAL PERIODONTAL THERAPY ON POCKET CLOSURE. PRELIMINARY RESULTS

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Aim: the longitudinal study aimed to assess the percentage of closed periodontal pockets at different re-evaluation time-points (3, 6 and 12 months) following non-surgical periodontal therapy (NSPT) in patients diagnosed with periodontitis.

Methods: the first 28 (out of a total of 52) patients underwent NSPT. At baseline, probing pocket depth (PPD), clinical attachment level (CAL), full mouth bleeding score (FMBS) and full mouth plaque score (FMPS) were recorded. Re-evaluations were performed at 3 months, 6-8 months and 12 months; at each timepoint, the percentage of closed pockets was calculated, defined as PPD < 5 mm and no PPD = 4 mm with bleeding on probing (BOP).

Results: significant clinical improvement was observed within the first 3 months of follow-up, with a significant reduction in

PPD from 3.07 ± 0.68 mm to 2.42 ± 0.48 mm ($p < 0.001$) and gain in CAL from 3.71 ± 1.34 mm to 3.18 ± 1.14 mm ($p < 0.001$). The percentage of pathological pockets decreased from 24.65% to 9.98% ($p < 0.001$). Based on these preliminary data, clinical parameters remained stable with no further statistically significant changes at subsequent follow-ups.

Conclusions: the primary clinical benefits of NSPT appeared within the first 3 months post-treatment. Subsequent assessments at 6 and 12 months showed only minor improvements in pocket closure. A large sample size is warranted to confirm these findings and to explore how patient- and site-specific factors such as disease severity, oral hygiene compliance and bone loss pattern may influence pocket closure.

GINGIVAL TISSUE MATURATION INDUCED BY A NOVEL CLASS V RESTORATIVE TECHNIQUE FOR THE TREATMENT OF GINGIVAL RECESSIONS

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Aim: this study evaluated the effect of a novel Class V restorative technique, designed with increased cervical emergence profile thickness, on gingival tissue maturation, focusing on tissue thickness and coronal migration.

Methods: six patients (44 teeth) with Miller Class I recessions, associated or not with non-carious cervical lesions, received Class V restorations extending to the maximum root coverage, using the new emergence profile design. Intraoral scans, acquired at baseline and after 2 months, were superimposed to measure gingival thickness and emergence profile thickness variations at the buccal zenith and at 0.5, 1.0, and 1.5 mm. Keratinized tissue width and recession reduction were also digitally assessed. Pearson's correlation and t-tests were applied.

Results: mean gingival thickening at the buccal zenith was 0.31 ± 0.30 mm, associated with a mean increase in dental thickness of 0.39 ± 0.38 mm at 0.5 mm. The increase in gingival thickness correlated significantly with restoration thickness at all considered levels, particularly at 0.5 mm coronal to the zenith ($p = 0.000$). Upper quadrants showed greater thickening at 0.5 mm than lower ones ($p = 0.030$). Baseline keratinized tissue strongly influenced gingival maturation ($p = 0.007$). Recession reduction correlated with gingival thickness, with the strongest association at 0.5 mm ($p = 0.003$).

Conclusions: this Class V restorative approach was associated with gingival thickening and recession reduction within 2 months. It may help improve gingival biotype and potentially reduce the need for, or invasiveness of, subsequent mucogingival surgery.

HYGIENIC MAINTENANCE OF A NOVEL CLASS V RESTORATIVE TECHNIQUE FOR GINGIVAL RECESSION TREATMENT: A CLINICAL AND *IN VITRO* EVALUATION

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Aim: this study aimed to assess whether a novel Class V restorative technique, characterized by an increased emergence profile thickness to promote gingival maturation, affects hygienic maintenance. *In vivo* clinical periodontal parameters and *in vitro* plaque retention were evaluated.

Methods: six patients (44 teeth) with Miller Class I recessions underwent the restoration. Changes in plaque index (Δ PI), bleeding on probing (Δ BoP), and periodontal probing depth (Δ PPD) were recorded after 2 months. An *in vitro* study on a typodont with alternating restored and control teeth used a premature contact indicator fluid to simulate plaque. After standardized brushing, residual blue marker was quantified through digital analysis by measuring Hounsfield Unit (HU) changes on digital photographs. Evaluation was performed in three cervical areas extending 0.5

mm coronal to gingival margin, corresponding to the buccal zenith and mesial and distal transitions.

Results: no significant correlation was found between increased restoration thickness and changes in clinical parameters: Δ PI ($p = 0.540$), Δ BoP ($p = 0.213$), and Δ PPD ($p = 0.412$). The *in vitro* study confirmed no significant difference in HU between restored and non-restored surfaces at the buccal zenith ($p = 0.930$), mesial ($p = 0.977$), and distal sites ($p = 0.477$).

Conclusions: the new Class V restoration technique with an increased emergence profile does not compromise oral hygiene maintenance. It allows for spontaneous gingival maturation without increasing the risk of plaque accumulation or inflammation, supporting its use as a preparatory step before mucogingival surgery.

IMPLEMENTATION OF AN AI-INTEGRATED DIGITAL PERIODONTAL CHARTING SYSTEM: PERIO DELPHI

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Aim: to evaluate the usability, clinical workflow impact, and diagnostic accuracy of Perio Delphi, a novel digital periodontal charting system with integrated artificial intelligence (AI) support.

Methods: Perio Delphi was implemented in a clinical setting among periodontists and dental hygienists. The system integrates AI algorithms for automatic detection of probing depths, clinical attachment levels, and bleeding on probing, while generating comprehensive periodontal charts in real time. Users recorded periodontal data from 50 patients using both conventional paper-based charting and Perio Delphi. Metrics evaluated included time required for charting, accuracy of recorded measurements, and user satisfaction through standardized questionnaires.

Results: Perio Delphi significantly reduced the time required for charting compared to manual methods. AI-assisted measurements demonstrated high concordance with clinician assessments, with improved consistency in detecting periodontal pockets ≥ 5 mm and sites with bleeding on probing. Users reported increased confidence in data entry and interpretation, and highlighted the benefit of real-time alerts for high-risk sites.

Conclusions: Perio Delphi offers an efficient, accurate, and user-friendly approach to periodontal charting, integrating AI to support clinical decision-making. The system has the potential to enhance workflow efficiency, improve diagnostic consistency, and facilitate risk-based periodontal management.

IMPACT OF ORTHODONTIC APPLIANCES ON PERIODONTAL PARAMETERS AND WHITE SPOT LESION DEVELOPMENT: A 6-MONTH PROSPECTIVE COMPARATIVE STUDY

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Aim: to longitudinally evaluate changes in periodontal parameters and the development of white spot lesions (WSLs) associated with orthodontic treatment, and to compare outcomes between patients treated with metal brackets and those treated with expanders.

Methods: this prospective clinical study included 31 patients aged 10-18 years undergoing orthodontic treatment with either fixed metal brackets or maxillary expanders. Clinical assessments were conducted at baseline (T0) and after 6 months (T1), including the Plaque Index (PI), Bleeding on Probing (BOP), enamel demineralization (WSLs), and the DMFT index. Information on toothbrushing frequency, oral hygiene practices, and dietary habits was also collected. Statistical analyses were performed using IBM SPSS Statistics (version 29.0). Categorical variables were analyzed using chi-square tests, while Pearson or Spearman correlation analyses were used to as-

sess associations between clinical parameters. Logistic regression analysis was applied to identify predictors of changes in PI, BOP, and WSLs.

Results: significant increases in PI and BOP were observed from baseline (T0) to 6 months (T1) ($p < 0.05$), with greater increases in patients treated with fixed metal brackets compared to those treated with expanders. In the expander group, changes were primarily localized to the first permanent molars. Reduced toothbrushing frequency, male sex, and appliance type were identified as significant predictors of increased plaque accumulation and gingival bleeding.

Conclusions: orthodontic treatment was associated with short-term increases in plaque accumulation, gingival inflammation, and the development of WSLs, underscoring the importance of implementing effective preventive strategies throughout treatment.

USE OF A CUSTOM-MADE ACRYLIC PALATAL STENT TO MINIMIZE DONOR SITE MORBIDITY AFTER SUTURE-FREE EPITHELIALIZED GINGIVAL GRAFT HARVESTING: A RANDOMIZED CLINICAL TRIAL

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Aim: to investigate whether the use of a custom-made acrylic palatal stent (APS) reduces postoperative morbidity and improves patient-reported healing outcomes following epithelialized gingival graft (EGG) harvesting.

Methods: in this randomized, assessor-blind, parallel-arm clinical trial, 44 patients undergoing EGG harvesting were allocated to either APS (test) or no-stent (control) groups. Patient-reported outcomes included postoperative pain (primary outcome), bleeding, swelling, analgesic intake, OHIP-14 scores, and willingness for retreatment. Clinician-reported outcomes included epithelialization (H_2O_2 test), photographic healing assessment, and Optical Coherence Tomography (OCT) based evaluation of epithelial and connective-tissue dynamics over 28 days.

Results: the APS group demonstrated significantly lower postoperative pain throughout the first two weeks ($p < 0.001$),

reduced bleeding within the first 72 hours ($p = 0.014$), and lower total ibuprofen consumption ($p = 0.043$). OHIP-14 scores improved more rapidly in the test group during the first postoperative week ($p = 0.046$). Willingness for retreatment was substantially higher in the APS group compared with the control group (91% vs 59%). Clinical healing parameters, including color match and epithelialization at Days 7 and 14, showed no significant differences between groups. OCT analyses demonstrated similar postoperative trajectories in keratinized and epithelial layers across groups, indicating comparable underlying healing despite divergent symptom profiles.

Conclusions: the use of an APS significantly reduces early postoperative morbidity following EGG harvesting, improving patient comfort, recovery, and acceptance of future treatment thereby serving as a simple, effective, and patient-centered adjunct to soft-tissue grafting procedures.

CLINICAL AND RADIOGRAPHIC OUTCOMES OF REGENERATIVE SURGICAL TREATMENT OF PERI-IMPLANTITIS

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Aim: to evaluate clinical and radiographic outcomes following regenerative surgical treatment of peri-implantitis and to compare the effects of two implant surface decontamination protocols.

Methods: in this 12-month randomized clinical trial, patients with peri-implantitis were treated either with mechanical debridement (MD) plus chlorhexidine (CHX) or with MD + CHX combined with air abrasive spray using erythritol powder. After flap elevation, implant surfaces were decontaminated and intra-bony defects were grafted with a bovine-derived xenograft. Clinical parameters, including plaque, bleeding on probing, suppuration, probing depth, attachment level, recession, and keratinized tissue width, as well as radiographic bone levels, were evaluated at baseline, 6, and 12 months.

Results: all treated implants showed clinical improvement over 12 months. Probing depths decreased, bleeding on probing and suppuration were reduced or eliminated, and radiographic bone levels improved, confirming stable regeneration. Both treatment protocols yielded similar clinical and radiographic outcomes, with no additional benefit observed from the use of air abrasive spray.

Conclusions: regenerative surgical treatment of peri-implantitis effectively improves clinical and radiographic parameters. The adjunctive use of air abrasive spray does not appear to enhance treatment outcomes compared to conventional decontamination.

PERI-IMPLANT MICROBIOTA DYNAMICS AFTER SURGICAL DECONTAMINATION

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Aim: to investigate the impact of different implant decontamination protocols on the composition and diversity of peri-implant microbiota, and to compare microbial profiles between peri-implantitis sites and healthy oral sites.

Methods: patients affected by peri-implantitis were treated with surgical regenerative therapy combined with different decontamination approaches, including mechanical instrumentation with chlorhexidine alone or in association with air abrasive spray. Microbiological samples were collected from diseased and healthy sites at different time points. Metataxonomic analysis based on 16S rRNA gene sequencing was performed to characterize the microbial communities and evaluate changes in composition and diversity.

Results: the analysis of peri-implant microbiota showed a stable microbial composition over time following treatment, regardless of the decontamination protocol used. No relevant differences emerged between the tested decontamination methods in terms of microbiological outcomes. However, peri-implantitis sites consistently exhibited a microbial profile distinct from that of healthy sites.

Conclusions: decontamination protocols, including the adjunctive use of air abrasive spray, do not appear to significantly influence the peri-implant microbiota. The microbial profile associated with peri-implantitis remains distinct from healthy conditions, suggesting a limited impact of current treatments on microbiological composition.

MINIMALLY INVASIVE PERIODONTAL REGENERATION WITH A COMBINATION APPROACH USING EITHER HYALURONIC ACID OR ENAMEL MATRIX DERIVATIVES: A RANDOMIZED CONTROLLED CLINICAL TRIAL

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Aim: to evaluate and compare the clinical and radiographic performance of a bone xenograft combined with either Enamel Matrix Derivative (EMD) or cross-linked Hyaluronic Acid (HA) gel for the regenerative treatment of non-containing intrabony periodontal defects.

Material and methods: in this randomized clinical trial, stage III/IV periodontitis patients presenting intrabony defects after steps 1-2 of periodontal therapy were included. Sites were treated using a minimally invasive surgical technique with xenograft combined with EMD or HA. Primary (clinical attachment level [CAL] gain) and secondary outcomes (probing pocket depth [PPD] reduction, composite outcomes, radiographic defect fill, early healing index [EHI],

and patient-reported outcomes [PROMs]) were assessed at 12 months.

Results: forty-nine patients were included (EMD $n = 27$; HA $n = 22$). At 12 months, both groups showed significant clinical improvements ($p < 0.001$). Mean CAL gain was 3.16 ± 1.47 mm (HA) and 2.98 ± 2.51 mm (EMD), with no significant difference ($p = 0.253$). No inter-group differences were found for PPD reduction (HA 3.68 ± 1.13 mm; EMD 3.51 ± 1.66 mm, $p = 0.207$) or radiographic bone fill (2.74 mm in both groups, $p = 0.298$). EHI and PROMs were also comparable ($p > 0.05$).

Conclusions: HA combined with xenograft provided clinical and radiographic outcomes comparable to EMD, suggesting it may be a valid alternative in regenerative periodontal surgery.

MINIMALLY INVASIVE *VERSUS* CONVENTIONAL THERAPY FOR RESIDUAL PERIODONTAL POCKETS

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Aim: residual periodontal pockets after non-surgical therapy represent a major challenge in periodontitis management. This randomized clinical trial compared the effectiveness of minimally invasive non-surgical therapy (MINST) *versus* conventional non-surgical therapy (CNST) for retreatment and evaluated predictors of outcomes.

Methods: fifty-four patients with stage III-IV periodontitis and residual pockets after step 1 and 2 therapy were randomly assigned to CNST or MINST. Treatments were performed quadrant-wise with 12-month follow-up. The primary outcome was probing pocket depth (PPD) reduction. Secondary outcomes included clinical attachment level (CAL), bleeding on probing (BoP), and number of residual pockets. A mixed generalized

linear model was used to evaluate predictors of treatment response.

Results: both groups improved over time. However, MINST showed greater PPD reduction at 12 months, with better bleeding scores and a larger reduction in pockets ≥ 4 mm and ≥ 6 mm. The proportion of sites with PPD < 4 mm increased more in the MINST group. MINST was an independent predictor of better outcomes, while smoking, poor compliance, and higher baseline inflammation negatively affected results.

Conclusions: MINST provides superior outcomes compared to conventional retreatment of residual pockets. Patient-related factors, especially compliance and inflammation, influence response, supporting minimally invasive approaches in periodontal care.

KERATINIZED TISSUE AUGMENTATION IN PERI-IMPLANT MUCOSITIS: A RANDOMIZED CONTROLLED CLINICAL TRIAL

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Aim: to evaluate the effects of keratinized tissue augmentation on clinical outcomes in patients with peri-implant mucositis and reduced keratinized mucosa (< 2 mm).

Methods: patients presenting with peri-implant mucositis (bleeding on probing, BoP+) and at least one implant site with < 2 mm of keratinized mucosa were included and randomly assigned to three groups: (1) apically positioned flap (APF) with free gingival graft (FGG); (2) APF with porcine-derived collagen matrix; and (3) no treatment (control). All patients were enrolled in a 3-month maintenance program.

Clinical parameters (full-mouth plaque score [FMPS], full-mouth bleeding score [FMBS], plaque index [PI], BoP, suppuration, probing pocket depth [PPD], recession [REC], and keratinized mucosa width [KM]) and patient-reported outcomes (postoperative discomfort and brushing discomfort)

were recorded at baseline, 3, and 6 months. Changes in clinical parameters and disease resolution (BoP-) were evaluated at 6 months.

Results: at 6 months, both test groups showed an increase in keratinized mucosa width compared to baseline, while no changes were observed in the control group. A reduction in BoP and improvement in clinical parameters were observed in treated sites, with higher rates of disease resolution (BoP-) compared to controls. Patient-reported discomfort was higher in the FGG group compared to the collagen matrix group.

Conclusions: keratinized tissue augmentation appears to improve clinical outcomes in peri-implant mucositis patients with reduced keratinized mucosa. Both techniques were effective, although the collagen matrix may be associated with lower patient morbidity.

ADJUNCTIVE LOCAL APPLICATION OF SPERMIDINE AND CALCIUM CHLORIDE IN MINIMALLY INVASIVE NON-SURGICAL THERAPY (MINST): PRELIMINARY CLINICAL OUTCOMES

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Aim: the aim of this study was to clinically evaluate the clinical efficacy of minimally invasive non-surgical therapy (MINST) with or without adjunctive local application of a spermidine gel and calcium chloride sealant over a period of 3 months.

Methods: systemically healthy adult patients with stage III-IV periodontitis were recruited at the Department of Periodontology of the University of Naples Federico II and randomly allocated in two treatment groups: in the test group periodontal pockets were treated with MINST and adjunctive application of a spermidine gel and calcium chloride gel sealant, while in the control group MINST alone was performed.

Probing depth (PD) was recorded at each site at baseline and at 3-month follow-up. Full-Mouth Plaque score (FMPS) and Full-Mouth Bleeding score (FMBS) were also assessed. Mean

PD was set as the primary outcome. Statistical analysis was performed using t-test ($p < 0.05$).

Results: eight patients were included in the analysis (4 test, 4 control). At 3 months, all clinical parameters improved significantly in both groups ($p < 0.05$). In the test group, PD decreased from 6.13 ± 0.30 mm to 3.13 ± 0.30 mm, while in the control group from 6.15 ± 0.21 mm to 4.13 ± 0.30 mm. Furthermore, intergroup comparison revealed a statistically significant difference in PD at follow-up ($p = 0.003$).

Conclusions: within the limitations of this preliminary study, the present results indicate that MINST represents an effective approach for non-surgical therapy and the adjunctive use of spermidine and calcium chloride may additionally improve PD reduction at 3 months.

PATIENT RESPONSE TO MOTIVATIONAL INTERVIEWING AT FIRST PERIODONTAL VISIT: A RETROSPECTIVE ANALYSIS OF ASSOCIATED FACTORS AND DEVELOPMENT OF A NOMOGRAM-BASED PREDICTION SYSTEM (GUIDE-MI)

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Aim: to investigate the association between patient characteristics and the outcomes of motivational interviewing (MI) when delivered at the first periodontal consultation.

Methods: a retrospective analysis was conducted on data from a randomized trial. Changes in *Protection Motivation Theory* (PMT) scores, assessed immediately after MI, and Plaque Index (PII), measured after 8-12 weeks, were considered the primary outcomes. Multiple regression analyses were used to identify factors associated with MI outcomes. Significant predictors and their weights were used to develop a nomogram (*Graphical Utility for Individualized Decision Enhancement in Motivational Interviewing*; GUIDE-MI) for estimating individual patient response to MI.

Results: sixty-six patients were included. MI resulted in significant improvements in both PMT scores and PII ($p < 0.0001$ for both). Smaller improvements in PMT scores were associated with lower self-reported shame, higher anxiety/depression levels, greater perceived seriousness and fear of periodontal disease, and higher baseline interest and intention to adhere to treatment (adjusted $R^2 = 0.56$). Reduced PII improvement was associated with older age, higher daily smoking exposure, less severe periodontal diagnosis, higher fear and pride, and lower determination (adjusted $R^2 = 0.21$).

Conclusions: MI effectiveness is influenced by patient age, smoking habits, periodontal diagnosis, anxiety/depression, and specific psychological traits.

SHORT-TERM RESULTS OF PERIODONTAL REGENERATIVE THERAPY USING COMPOSITE OUTCOME MEASURE (COM): A RETROSPECTIVE ANALYSIS

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Aim: to evaluate the short-term clinical outcomes of intrabony defects following periodontal regenerative therapy at 1-year follow-up, using Composite Outcome Measure (COM).

Methods: a retrospective analysis was performed on 19 patients and 29 intrabony defects, treated with different regenerative approaches (guided tissue regeneration, enamel matrix derivative, or deproteinized bovine bone mineral with enamel matrix derivative). The following clinical outcomes were recorded: Full-Mouth Plaque Score (FMPS), Full-Mouth Bleeding Score (FMBS), Clinical Attachment Level (CAL), Probing Depth (PD), and Gingival Recession (GR). Intrabony defects were classified as COM1 (CAL gain ≥ 3 mm and PD ≤ 4 mm), COM2 (CAL gain < 3 mm and PD ≤ 4 mm), COM3 (CAL gain ≥ 3 mm and PD > 4 mm), and COM4 (CAL gain < 3 mm and PD > 4

mm). The primary outcome was COM change. Sites classified as COM1 were considered indicative of treatment success.

Results: a statistically significant difference ($p < 0.05$) was found from baseline to 1 year for PD (8.01 ± 1.9 mm to 3.96 ± 1.4 mm), CAL (9.43 ± 2.5 mm to 6.22 ± 2.7 mm) and GR (1.40 ± 1.3 mm to 2.26 ± 1.9 mm). Treatment success (COM1) was achieved in 22 defects (75.9%), while 1 defect (3.4%) was classified as COM2, 1 (3.4%) as COM3, and 5 (17.2%) as COM4.

Conclusions: clinical results achieved through regenerative therapy in intrabony defects appear to be maintained over a period of 1 year. However, treatment success (COM1) has not always been achieved. Long-term studies will be needed to evaluate the efficacy of regenerative therapy using COM as a reliable outcome of treatment success.

PERIODONTAL ASPECTS OF IMPACTED CANINES FOLLOWING COMBINED SURGICAL-ORTHODONTIC TREATMENT: A RETROSPECTIVE STUDY

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Aim: the aim of this retrospective study is to evaluate the long-term periodontal status of canines following combined surgical-orthodontic disinclusion, using the contralateral spontaneously erupted canines as controls.

Methods: a total of 12 patients (8 females, 4 males), who underwent combined surgical-orthodontic treatment, were retrospectively included in the study. The *Closed Eruption Technique* was combined with controlled orthodontic traction using a metal chain attached to a fixed multibracket appliance. All patients had a minimum follow-up of 1 year after completion of orthodontic treatment. Pre-treatment variables related to the impacted canine (alpha angle, distance, sector) were assessed on initial panoramic radiographs. At follow-up visit, clinical and

radiographic parameters were recorded including probing depth, plaque index, bleeding index, gingival recession, gingival thickness and radiographic bone loss.

Results: probing depth values of the surgically exposed canines did not show clinically significant differences compared with the control group. Similarly, gingival thickness did not show statistically significant differences between the two groups.

Conclusions: the *Closed Eruption Technique* combined with controlled orthodontic traction allowed for the successful alignment of impacted canines while maintaining periodontal health. These findings support the clinical effectiveness of the combined surgical-orthodontic approach.

MANAGEMENT OF GUMMY SMILE WITH BOTULINUM TOXIN-A: A NON-SURGICAL APPROACH

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Aim: gummy smile, characterized by excessive gingival exposure during smiling or speaking, can significantly affect dental aesthetics and patients' self-esteem. This study aims to evaluate the effectiveness of botulinum toxin as a treatment for gummy smile correction. Specifically, the objectives include reducing the hyperactivity of the labial elevators and assessing patient satisfaction post-treatment.

Materials: the study involved a sample of 30 patients aged between 20 and 45 years, all presenting with gummy smile. Participants underwent an initial clinical assessment, which included measurements of gingival exposure and satisfaction questionnaires. Botulinum toxin was injected into the labial elevator muscles using standardized dosing and techniques. Post-treatment evaluations were conducted at 1, 3, and 6 months, utilizing objective measurements and subjective patient feedback.

Results: results showed a significant reduction in gingival exposure in over 90% of patients one month after treatment, with effects persisting up to 6 months. Measurements indicated an average reduction of 50% in gingival exposure ($p < 0.05$). Furthermore, the satisfaction questionnaire revealed a high approval rate, with 85% of patients reporting a significant improvement in their aesthetic self-perception.

Conclusions: botulinum toxin proves to be an effective and safe option for gummy smile correction, resulting in positive clinical outcomes and high patient satisfaction levels. As a minimally invasive treatment with a brief recovery time, it represents an available alternative to more complex surgical interventions. It is recommended to consider botulinum toxin as a first-line treatment for patients with gummy smile, alongside further studies to explore the duration of effects and long-term safety profile.