Anthony H. Melcher Award
Poster Session
RESEARCH COMPETITION

Coordinator: **Marco Clementini**
Evaluating Committee:
Elena Calciolari, Nicola Discepoli, Gianluca Vittorini Orgeas

The Poster Session will be organized on Friday the 27th as follows:

- Poster set-up time: $08:30_{am}$-$10:45_{am}$ on Friday, May the 27th on the panel showing the assigned code.

The Evaluating Committee will view the posters and enter into lively and challenging discussions with the poster presenters, as follows:

- **R1-R6**: during the coffee break time on Friday the 27th from 11.05_{am} to 11.40_{am}
- **R7-R16**: during the lunch break time on Friday the 27th from 01.20_{pm} to 02.30_{pm}
- **R17-R22**: during the coffee break time on Friday the 27th from 03.50_{pm} to 04.30_{pm}.

R1 Features of rota fluid calcium-phosphor swap among the patients with insufficiency and deficiency vitamin D during dental implantation

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Aim
Vitamin D deficiency can cause poor osseointegration of dental implants. Vitamin D deficiency is considered at serum 25(OH) levels
Materials and Methods
15 patients with dental implants (in 6 men and 9 women with no molars and premolars) was carried out. The studies were carried out before implantation and 1 month after dental implantation. 26

implants were placed. Together, blood was taken and saliva was collected to assess markers of bone tissue metabolism and determine the level of vitamin D. Saliva was taken before treatment (on an empty stomach or 3 hours after eating) and 1 month after dental implantation. Alkaline phosphatase (AP), Ca and P levels were studied in saliva. The patients were separated into 2 groups. Group 1 (n=8) included patients with vitamin D levels between 20-30 ng/ml, group 2 (n=7) included patients with vitamin D levels below 20 ng/ml). To study the status of vitamin D in 15 patients before dental implantation, enzyme immunoassays blood tests were performed for the content of serum 25 (OH) D-marker of vitamin D. In 8 (53.3%) patients, a low level of 25 (OH) D, which characterizes the content of vitamin D, was detected. As insufficient (in the range of 20-30 ng/ml). 7 (46.7%) patients had vitamin D deficiency (≤20 ng/ml). Statistical analysis of the obtained results was carried out using the Excel 2017 software package. Structural characteristics were used (mean-M, error of the mean-m), and the nonparametric Wilcoxon-Mann-Whitney test was used to assess the differences in quantitative data between the choices. Differences were considered statistically significant at p.

Results

The initial content of Ca in saliva in patients of the 1st group was 1.85±0.05 mmol/L. After dental implantation, Ca concentration significantly decreased.

Conclusions

So, the systemic state of the patient directly affects the engraftment of the dental implant. To ensure optimal treatment results, the patient is advised to supplement with vitamin D if its serum level is not within the normal range. Vitamin D deficiency can lead to decreased bone mineral density, osteoporosis, and possible risk of losing implants. In cases where there is a proven correlation between low serum vitamin D levels and an increased risk of implant loss, the physician may administer a dose of vitamin D several weeks prior to surgery. Thus, the clinician can regulate the serum level and help regulate the process of osseointegration

R2 Effectiveness of melatonin gel mixed with nano-hydroxyapatite bone graft on crestal bone level around immediate implant in the esthetic zone: A randomized Controlled Clinical Trial

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Aim
To evaluate melatonin gel mixed with nano-hydroxyapatite bone graft and PRF on crestal bone level around immediate implant in the esthetic zone
Materials and Methods
The study included 20 patients with mean age 32± 6 with a non-restorable tooth in the esthetic zone. Patients were randomly allocated into one of two groups: Group I (n=10) received immediate implants surrounded by nanohydroxyapatite graft mixed with melatonin gel and covered with platelet rich fibrin, group II (n=10) received immediate implants surrounded by nano-hydroxyapatite graft alone covered with platelet rich fibrin. Cone beam computed tomography (CBCT) evaluating crestal bone level and bone density was performed at day of surgery as well as at 3, 6 months postoperatively. Postoperative pain was evaluated using VAS scale daily from the day of surgery till 1 week postoperative.
Results
All patients attended their follow up appointments, with no dropouts and with uneventful healing. Regarding crestal bone loss, there was significantly less marginal bone loss at 3 as well as 6 months in study group compared to control group. Regarding bone density, study group showed significant increase in bone density at 3 months while insignificant increase at 6 months, however control group showed insignificant increase in bone density at both 3 and 6 months postoperatively. Study group showed more significant reduction in postoperative pain compared to control group.

Conclusions
It can be concluded that melatonin could have a potential role when added to bone grafts in the success of immediate implants.

R4 Self-perception and professional evaluation of smile aesthetics

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Aim
Clinical evaluation and patient perception are two essential aspects of smile aesthetics in the clinical practice. However, there is only few data available on the factors affecting the consistency of self-perceived and professionally evaluated smile aesthetics. Also, awareness of different groups may affect the perception of quality of smile. Therefore, we aimed to clinically evaluate the smile aesthetics and the factors affecting the perception of subjects with different backgrounds.
Materials and Methods
A total number of 99 subjects were enrolled in the current cross-sectional study and assigned into three groups based on their backgrounds. Group 1 (n=33) consisted of patients attending the university dental clinic, while undergraduate dental students of 4th and 5th year and post-graduate students in different specialty programs of Dental Faculty were included in Group 2 (n=33) and Group 3 (n=33), respectively. A questionnaire comprising of demographic data were applied and patients' perception of their own smile aesthetics in each group were collected by the first examiner by using Visual Analog Scale (VAS). A second blinded examiner assessed and recorded the clinical data related to smile aesthetics and, also the Smile Aesthetic Index (SEI) was calculated for each subject. Descriptive statistical analyses were performed by using SPSS programme.

Results

The mean SEI values for Group 1, Group 2 and Group 3 were found to be 4.27±1.55, 5.67±1.22, and 5.79±1.34, respectively. Self-assessment of smile by using VAS revealed mean values of 4.22±3.36 in Group 1, 2.94±3.02 in Group 2 and, 2.30±2.27 in Group 3. Inter-group comparison of SEI values revealed significant differences between Group 1 and Group 2, and Group 1 and Group 3 ($p < 0.05$).

Conclusions

The inconsistency between self-perception and clinical assessment of smile aesthetics may interfere with the clinician's success to fulfill the patient expectations. Although, it is assumed that dental awareness may improve the subjective assessment of smile aesthetics, the low consistency of professionally evaluated smile aesthetics and patients' perception for the post-graduate group in the current pre-liminary study suggests that high dental knowledge levels may also cause over-criticism of dental aesthetics. Every single factor that may affect the self-perception should be evaluated carefully to analyse different aspects of smile quality in clinical practice.

R5 Longitudinal study on the treatment of periodontitis: prognostic factors for tooth loss

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Aim

The aim of this study was to investigate factors potentially predicting tooth loss in patients affected by periodontitis following a minimum of 10 years of periodontal maintenance therapy. Several tooth-, patient-, and site-level factors associated with tooth loss have been studied and reviewed in the literature. Since tooth loss clusters in a subset of patients, long-term data from patients with periodontitis are particularly important in properly defining prognosis and treatment plan.

Materials and Methods

The analyzed sample consisted of 20 subjects, treated and maintained for at least 10 years in different periodontal specialist practices. A statistical analysis was conducted at at patient and tooth level, using tooth loss at ten years as the primary outcome. Between-group differences in quantitative variables were assessed by the ANOVA test, while qualitative variables were assessed by $\chi 2$ or Fisher's exact test. Variables found to be associated with tooth loss at the univariate analysis were entered into a multiple logistic regression model. In addition, a sub-analysis, conducted as above, was performed on elements with PPD≥ 5 mm at re-evaluation.

Results

A total of 512 teeth were present at baseline examination. During steps 1 and 2, 23 teeth (4.5%) were extracted. After re-evaluation, 121 (23.2%) teeth underwent periodontal surgical therapy. Out of a total of 489 dental elements present at re-evaluation, 44 teeth were lost at 10 years. Stage IV Periodontitis patients tend to lose more teeth than stage III patients ($p=0.02$). As a result of the multiple logistic regression at the tooth level, mobility was found to be correlated to the risk of tooth loss ($OR= 3.1$; $p< 0.05$) and teeth with more than 4 pockets were found to be at higher risk for tooth loss ($OR=50.2$; $p<0.05$).

Conclusions

In the analyzed sample, the stage of periodontitis correlates with the likelihood of tooth loss after ten years in individuals treated for periodontitis and placed in a maintenance system. Molars, mobile teeth and elements with ≥5 pockets tend to have an higher chance of being lost after 10 years. Performing periodontal surgery at teeth with residual pockets after re-evaluation significantly decreases tooth loss.

R6 Impact of time on connective tissue structure after platelet-rich fibrin (PRF) application at the donor site

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Aim
Repeated CTG harvesting from the same palate area for consecutive grafting requires good quality of newly formed connective tissue. PRF promoted collagenesis and tissue regeneration may enhance the tissue rebuilding process. The aim of the study was to evaluate a possible shortening of the re-harvesting time based on newly formed connective tissue morphology, immune expression of extracellular matrix proteins i.e. collagen type I and fibronectin as well as expression of COL1A1 and FN1 genes.
Materials and Methods
Twelve patients, aged between 23 and 49 years, who required at least two root coverage procedures on opposite sides of the dental arch were included in the study. In each patient, subepithelial connective tissue grafts were harvested twice at different intervals, i.e. at 6 or 9 weeks after the first surgery, with the use of single incision technique. After the first procedure, the donor site was maintained with the advanced-PRF, in the form of membranes formed from a double blood volume of 10 ml, centrifuged at 1300 rpm for 8 minutes. The reference and test tissue samples for histological (H-E staining), immunohistochemical and gene expression (mRNA) evaluation were taken from the primary connective tissue at the donor site and the newly reconstructed one.
Results
The histological evaluation of the samples showed greater homogeneity of the newly reconstructed connective tissue. In the sample after PRF application the compact connective tissue with a dense network of collagen fibers rich in fibroblasts was observed. There was no significant difference in tissue morphology after 6 and 9 weeks. The immunohistochemical analysis (based on the semi-

quantitative scale of the staining reaction intensity) revealed significantly higher expression of type I collagen in the tissue subjected to PRF application compared to the primary tissue. The difference was statistically significant.

Conclusions

Within the limitation of the study based on the morphology of the newly formed connective tissue as well as expression of collagen type I and fibronectin, it can be concluded that application of advanced-platelet-rich fibrin enables earlier connective tissue re-harvesting from the same donor site.

R7 Root Coverage with adjunctive Enamel Matrix Derivative Vs. cross-linked hyaluronic acid: 6 months, split-mouth, retrospective study

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Background

The adjunctive application of enamel matrix derivatives (EMD) to recession coverage (RC) procedures together with connective tissue graft (CTG) has been shown to improve the outcome of root coverage. Some publications have also demonstrated improved outcomes after applying adjunctive cross-linked hyaluronic acid (CLHA) during RC procedures combined with CTG.

Case report

1. To compare the efficacy of EMD vs. CLHA as adjunctive to modified coronally advanced tunnel (MCAT) technique combined with CTG for treating miller Class I-III recessions in a split-mouth design. 2. To compare the two methods' visual analog scale (VAS). Material and Methods: The study included six patients with three bilateral gingival recession defects in the upper jaw teeth, not including molars (36 defects). Each patient was treated on one side with either MCAT + CTG + EMD (EMD-side) or with MCAT + CTG +

CLHA (CLHA-side). Measurements of recession depth, recession width, probing depth, and width of keratinized tissue were performed clinically immediately before surgery and after six months. The VAS was recorded for the first week and 21 days after surgery. Results: Six patients with 36 Miller Class 1, 2, or 3 recessions have undergone either MCAT + CTG + EMD or MCAT + CTG + CLHA procedure by the same operator (ME), determined randomly. The mean RD at baseline for the CLHA-side was 3.3 ± 1.6 mm, and for the EMD-side was 3.4 ± 1.69 mm. The mean root coverage at the final evaluation was 93.35% ± 5.3 for the EMD-side and 93.09 ± 3.9 for the CLHA-side. Both treatments resulted in a statistically significant decrease in RD, RW and an increase in HKT at six months, with no significant difference between EMD-side and CLHA-side (p-value >0.999). CLHA-side experienced statistically significantly less pain (VAS score) than the EMD-side in the first week (p value=0.0313).

Conclusions

Within the limitations of this study, our findings show for the first time that adjunctive application of either EMD or CLHA together with MACT+CTG leads to a predictable root coverage without any difference in the treatment modalities. The application of CLHA as adjunctive to recession coverage with CTG positively impacts postoperative pain in the first week. Clinical implications: Applying CLHA in root recession coverage procedures can reduce patient pain and help his/her well-being

R8 Ice Cream Cone Technique with Immediate Implant Placement in Management of Patients with Labial Plate Dehiscence: A Case Series

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Aim
The study was aimed to assess the changes in the facial plate height and thickness after using ice cream cone technique with immediate implant placement in treatment of type II sockets.
Materials and Methods
The present study was conducted on 10 participants who were recruited from the outpatient Diagnostic center, Faculty of Dentistry, Cairo University. Ten participants with a non-restorable tooth in esthetic zone with facial bone dehiscence received immediate implant with ice cream cone technique. Vertical and horizontal bone changes, pink esthetic score (PES), gingival thickness (GT), implant stability, post-operative pain and patient satisfaction were all measured, 6 months following implant restoration. All these parameters were subjected to statistical analysis.
Results
All participants were available for analysis at the 6 months follow up. The mean vertical and horizontal bone resorption was 1.85(±1.14) mm and 1.3(±0.86) mm after 6 months with statistical significance reduction from the baseline. GT assessment showed statistical significance increase after 6 months of 0.55(±0.28) mm. KTW showed slight increase at 6 months from baseline with no statistical significance. The mean PES was 11.9 (±0.99). The mean implant stability was 67 (±5.1) and 71.1 (±11.6) ISQ at baseline and after 6 months respectively. Post-operative pain reported by the patients' revealed reduction at 14 days compared with 7 days. The mean overall satisfaction on VAS was 5.5 (±1.7)/7.

Conclusions

The ice cream cone technique as a flapless guided bone regenerative method with immediate implant placement in sockets with facial plate dehiscence in the esthetic zone might be considered as a promising intervention to reconstitute the compromised facial bone plate.

R9 Periodontal and implant health in patients with Sjogren's syndrome

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Aim

The purpose of the cross-sectional study was to evaluate the periodontal and implant health status in patients with Sjogren's Syndrome (SS), given the particular clinical settings of these patients.

Materials and Methods

After ethical approval, the study enrolled 17 patients (14 female and 3 male) diagnosed with SS (no other systemic condition) and 17 sex and aged-matched controls (no SS, no other systemic condition). The clinical criteria used for the periodontal evaluation of teeth and implants included: periodontal probing depth (PPD, 6 sites of probing of each tooth/implant), clinical attachment level (CAL), bleeding on probing index (BOP), plaque index (PLQ) and radiographic bone loss (RBL). The data was gathered on digital periodontal charts, generating individual results per patient, such as mean PPD (mms), mean CAL (mms), PLQ and BOP percentage values (%). This allowed (together with other clinical parameters' consideration – age, RBL), the diagnosis of periodontitis on stages and grades, or of periimplantitis, where observed. After clinical assessment of the study and control groups, the data was centralized, compiled and submitted for statistical analysis, using

GraphPad Prism 9.2.0 and Mann-Whitney test. The power analysis for our study was performed using G*Power 3.1.9.7, at a 95% confidence level and power factor of 80% for each of the groups. A two-sided p-value smaller than 0.05 was considered to be statistically significant.

Results

No statistical difference was found for demographics and number of teeth/implants. The median age of the SS patients was 49.7 years, with a total number of 327 existing teeth (19.2 teeth per patient) and 28 dental implants (6 patients with implants, 4.6 implants per patient). The control group had an average age of 52.4 years, with a total number of 384 teeth (22.5 teeth per control) and a total number of 32 implants (5 controls with implants, 6.4 implants per control). Regarding the periodontal status of teeth, mean PPD and CAL values were significantly higher in SS group as compared to controls (p0.05). Regarding PLQ index, the difference between the SS group (61%) and the control group (27,4%) was significantly higher, suggesting that reduced saliva flow has a significant impact on plaque accumulation. Nevertheless, in SS patients with dental implants, plaque levels were similar to that of controls. Regarding periodontal and implant disease diagnosis, the prevalence of Stage 1 to 4 periodontitis was significantly higher in the SS group compared to controls (Stage 1 and 2: 29,4% to 5,8%; Stage 3 and 4: 41,1% to 17,6%). Peri-implant mucositis was diagnosed in 17,64% of SS patients and 11,77% controls, with no statistical difference. Periodontal health was found in 11,77% in SS group and 64,7% in control group.

Conclusions

Patients with SS show a less favourable periodontal status than controls without SS, the prevalence of periodontitis being significantly higher in these patients. This is probably due to the increased biofilm accumulation in SS patients, in association with the reduced saliva flow, preventing efficient self-cleaning. Nevertheless, an improvement of oral hygiene and of periodontal status has been observed in SS patients receiving dental implants, suggesting that if granted proper dental care and oral hygiene instructions, the clinical disadvantages of xerostomia can be

outpaced. This illustrates the need of active and continuous dental and periodontal monitoring of SS patients, in order to reduce the risk of periodontal disease onset. *This work was supported by the grant POCU/993/6/13/153178," Performanță în cercetare" - "Research performance" co-financed by the European Social Fund within the Sectorial Operational Program Human Capital 2014-2020.

R10 Relationship between periodontal disease and complications in pregnancy: A case control study

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Aim

To assess the risk of pregnancy complications related to periodontal disease in women who have given birth in a public maternity hospital in the city of Algiers.

Materials and Methods

We conducted a case-control study, taking as assumptions that periodontal disease affects one in two women and at least double periodontal disease the risk of making a complication in type of pre-eclampsia, premature delivery or stunted intra uterine. 476 parturient aged 18 to 35 have been included, 96 cases and 380 controls. Any parturient who has given birth to a full-term newborn (≥37 SA) and has a birth weight ≥2500g) is considered a control. Any parturient with a complication such as pre-eclampsia or who has given birth to a premature newborn and/or having a low birth weight is considered a case. The same criteria are applied to cases and controls, except for gestational age at delivery which can be < at 37 weeks of amenorrhea, as well as the weight of the newborn which can be < to 2500g in the group of cases. Patients meeting the eligibility criteria were recruited after delivery during their stay at the gynecology and obstetrics services of public hospitals in the city of Algiers. After explaining the project to each patient, she was invited to participate in the study and give written consent to

participate in the study. To carry out our survey, an oral clinical examination and a questionnaire were made by the practitioner carrying out the project (periodontist). At the end of the clinical examination, each parturient received explanations to her questions and instructions regarding the treatment needs of his oral condition.

Results

These parturients range in age from 18 to 35 years, on average 28.1 ± 4.0 years. More than half of them have at least a secondary level and in 45% of cases, they are primiparous. Pregnancy ended with preterm delivery in 84 cases, low birth weight in 11 cases and preeclampsia in one case. Our study found that periodontal diseases are frequent (67%) and that they are a risk factor for complications of pregnancy. The risk is high, it is estimated from the Odds ratio, which is equal to 7.10 (IC 95 %: 3, 19-16, 42). It is a highly significant association with p < 10-7. In addition, when the link is analyzed with periodontal disease according to its gravity, there is a significant trend in the increase in the number of cases with the seriousness (p < 10-6). In order to appreciate the clean part of periodontal disease in the occurrence of a complication of pregnancy, multi varied type of logistic regression analysis enabled us to estimate the risk adjusted to two confounding factors (history obstetric and parity) to ORa = 8.14 (IC 95%: 3.77-17,57) p value = 0,000. Also, the study reveals that there is a significant link between preterm birth and periodontitis with a p< 10-5, OR = 4.68 (95% CI of OR: 2.28-9.56).

Conclusions

Periodontal diseases are very common, but largely preventable medical conditions. They both can be prevented and treated if they are managed properly and in time. In order to promote health, it is necessary that future mothers know the symptoms of periodontal disease and are encouraged to adopt appropriate health behavior. Pregnant women are more likely to seek dental care if recommended by their gynecologist, prenatal care giver. We would like to recommend that periodic dental checkups be incorporated into prenatal health cards.

R11 Periosteal fenestration procedure in vestibuloplasty increases the width of keratinized gingiva: an in vitro experimental study

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Aim

It has been proposed that periosteal fenestration can be used to create predictable keratinized tissue during vestibuloplasty with apically positioned flap (APF) surgery and prevent relapse after healing. The aim of this study was to clinically and histologically compare the width of keratinized tissue (KW) following vestibuloplasty with and without the periosteal fenestration procedure.

Materials and Methods

This study obtained six mongrel dogs, and diamond burs were used to make vertical grooves on the dental crowns of three premolars and a molar in each upper jaw. In total, 48 grooves were placed in six mongrel jaw models. These grooves were used as a reference to standardize the digital and clinical measurements of the keratinized tissue and the histologic sections. Vestibuloplasty was surgically conducted using APF on each upper jaw (12 sites). After APF, a periosteal fenestration technique for preventing relapse was applied on the right lateral jaw (test) but not on the left lateral side (control). After 8 weeks of healing, the experimental sites were scanned with a digital oral scanner, and the obtained 3D images were saved. According to our previous report, clinical, digital, and histological outcomes were analyzed. The mean differences at post-operative and 8-week healing measurements were assessed using the paired t-test. The criterion for statistical significance was set at p 0.05.

Results

The clinically and digitally increased amount of keratinized tissue was seen at all treated sites after 8 weeks of healing. The clinical mean increased amount of keratinized tissue width was 4.3 ± 1.9mm at test sites and 3.2 ± 1.6mm at control sites; this difference was significant ($p < 0.05$). Furthermore, compared with the control group, the clinical amount of relapse was -6.8 ± 2.6mm in test group and -8.5 ± 2.4mm in control group; Compared to the control group, the amount of relapse was significantly less in the experimental group ($p < 0.05$). The digital mean increased amount of keratinized tissue width was 4.3 ± 2.0mm at test sites and 3.6 ± 1.3mm at control sites; this difference was not significant ($p > 0.05$). In histomicrographic analysis, the non-keratinized immobile (NKIM) region was observed. The composition of NKIM region of test group was significantly higher than control group. However, the composition of KT of test group was significantly lower than control group ($p < 0.05$).

Conclusions

Based on the results of this investigation, the additional periosteal fenestration procedure during vestibuloplasty surgery with apically positioned flap can increase the keratinized tissue width and deepen the oral vestibule clinically.

R12 Excellent soft tissue integrity provided by papilla tunnelling techniques: Volumetric analysis of a case series

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Aim

Papillae tunnelling techniques, PTT (non-incised papillae surgical approach – NIPSA and entire papillae preservation technique – EPPT) have been recently proposed to enhance periodontal regeneration. Using volumetric analysis of subtracted consecutive intraoral scans and a recently developed digital approach, the

purpose of this case series was to establish whether the papillary tissues above the interdental periodontal defects remain stable following surgery.

Materials and Methods

The first six patients (n=6) with periodontitis stage III/IV and at least one 2/3-wall isolated deep intrabony defect in the interdental region were selected. An incision was placed either horizontally at the mucogingival junction (NIPSA, test group, n=3) or vertically on the adjacent tooth (EPPT, control group, n=3) to preserve the anatomy of the interdental papillae. A full-thickness flap was carefully raised with tunnelling instruments, the root surfaces thoroughly cleaned, and the defect filled with a bone graft (Gen-Os, Tecnoss, Turin, Italy). Microsurgical suturing techniques were used for wound closure. Intraoral scans were taken (Trios 4, 3Shape) at baseline and 6 months post-surgery. Digital evaluations were performed directly by measuring the distance between the gingival margins on the superimposed baseline and 6-month follow-up digital models.

Results

Early healing was uneventful in all cases. Sufficient wound closure prevented potential exposure of the inserted biomaterial in all cases. Basic periodontal parameters were recorded on the initial visit, during and 6 months after the surgery. After 6 months, complete pocket closure was observed in all treated cases with significant decreases in pocket depth reduction (4.3 ± 1.2 mm vs 3.7 ± 0.6 mm), clinical attachment gain (4 ± 1 mm vs 3 ± 0 mm) and minor increases in gingival recession in the test and the control group (0.3 ± 0.6 mm vs 0.7 ± 0.6 mm). The digital analysis4 revealed an average papillae volumetric change of 0,31 ± 0,32 mm vs 0,62 ± 0,62 mm in the test and the control groups, measured at every 0.2 mm, as a sequence of equidistant points in a buccolingual direction at the central point of the papillae. The volumetric analysis also showed different patterns of soft tissue healing, which was determined by the 3D measurement at the central point of the surgical incision. A tissue reduction of up to 1 mm was detected in all three cases in the area of the incision created using the NIPSA

approach; however, no such dimensional changes were observed in the area of the incision created using the EPPT method.

Conclusions

This case series study is a part of the randomized clinical study registered a Clinicaltrials.gov as NCT04782921, in which we evaluated the use of different xenogenic bone grafting materials in conjunction with one of the PPTs for the regeneration of isolated periodontal intrabony defects. Six months after treating intrabony deficiencies with PPT and xenogenic bone material, papillary tissue was well preserved with both surgical approaches. The volumetric study indicated exceptionally stable interdental tissues with different patterns of incision healing between the two surgical modalities. The incision line after performing NIPSA displayed a distinct shrinkage of soft tissue, whereas no such shrinkage was observed when using EPPT.

R13 The impact of abutment design on implant-abutment connection integrity

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Aim

To evaluate the impact of engaging and non-engaging abutments on implant-abutment connection integrity of two-implant-supported screw-retained zirconia frameworks fixed on malpositioned implants.

Materials and Methods

Thirty two-implant-supported screw-retained zirconia frameworks were fabricated and divided into three groups (n=10) according to different abutment combinations: both engaging (E-E), engaging and non-engaging (E-NE), both non-engaging (NE-NE).The fit of the frameworks were evaluated on control and study models simulating 50, 100, 150 µm vertical (V) and 35, 70, 100 µm horizontal (H) misfits. The implant-abutment gap between implant

platform and reference line on titanium base were measured using a stereo microscope when only one abutment screw was tightened. Kruskal-Wallis test and Mann–Whitney U test ($P < .05$) were used to compare different implant-supported zirconia frameworks on each study model.

Results

E-E frameworks had higher vertical gap (ranged from 40.07 to 131.05 μm) in H35 and H70 misfit levels as compared to E-NE (ranged from 19.75 to 85.13 μm) and NE-NE (ranged from 6.58 to 14.31 μm) frameworks. Larger vertical gaps were observed in E-NE frameworks than NE-NE frameworks with all levels of the simulated misfits except H100 and V150. Comparing medians of the 100 μm misfit in horizontal (E-NE 140.42 μm; NE-NE 151.62 μm) and vertical (E-NE 49.84 μm; NE-NE 42.56 μm) directions, it was found that the horizontal misfits caused larger vertical gaps. The comparison between different abutment combinations revealed a significant difference in each simulated misfit group ($P < .001$).

Conclusions

With an increased level of the simulated misfit, the vertical gap between the implant and abutment increases. NE-NE abutment combination was found to tolerate better the different misfit levels followed by E-NE and E-E combinations.

R14 Influence of orthodontic and periodontal factors on the occurrence of gingival recessions after orthodontic treatment: 5 years retrospective study

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Aim

The aims of this study were: 1) to evaluate the prevalence, extension, severity and distribution of gingival recessions (GR) 5 years after orthodontic treatment; 2) identifying the impact of some periodontal and orthodontic factors on the occurrence of GR.

Materials and Methods

This is a retrospective study including patients who had undergone orthodontic treatment (vestibular Straight Wire technique) and presenting initial and final orthopantomography, teleradiography, model casts and intraoral photos at the beginning, at the end of treatment and annually up to 5 years of follow up. For each patient demographic parameters were collected from the medical records and it was ascertained whether orthopaedic treatment had been performed before orthodontic treatment. Based on the values of the ANB, SnGoGn and final IMPA angles from the initial and final cephalometries, patients were classified for skeletal malocclusion on the sagittal plane (I/II/III skeletal class) and on the vertical plane (normodivergent, hypodivergent, hyperdivergent) and final lower incisal inclination (normo, retroclined, proclined). Each intraoral photo was calibrated with the corrispective cast using a manual caliber. From these pictures the clinical crown of the superior frontal teeth (13-23), the keratinized tissue height (KTH) apical to each tooth and the severity of GR (when present) were measured. Categorical measurements were described by frequency distribution, expressed in terms of prevalence, with the relative standard error. A multivariate regression analysis was also performed to investigate the impact of each variable at baseline on the occurrence of GR at 5 years.

Results

In the selected sample of 149 patients, the prevalence of patients with at least one GR was 4.69% at the beginning of the treatment, 10.06% at the end of it, 32.88% at 3 years of follow-up up and 38.92% at 5 years of follow up. The higher incidence was recorded between the end of orthodontic treatment and one year of follow up. Number of patients with GR increased over time, and also the number of GR for each individual patient. Teeth most affected by GR were the first premolars and first molars of the upper arch, the central incisors and the premolars of the lower arch. Severity of GR (REC depth) increased from the beginning of the orthodontic treatment up to 5 years of follow up. Before orthodontic treatment, 73,3% of all the GR were 1mm severe and 26,7% were 2mm, with no 3 or 4 mm GR observed. Five years after orthodontic treatment,

3mm GR were 5.3% and 4 mm GR were 0.9%. The multivariate regression analysis revealed that age, gender, type of sagittal or vertical malocclusion at the beginning of the orthodontic treatment and final lower incisal inclination does not seem to influence the prevalence of GR at 5 years of follow up. Conversely, a previous orthopedic treatment seems to be protective on the occurence of GR while the presence of less than 2mm of KTH at baseline seems to be a risk for the occurence of GR, mostly at premolars and molars of the upper arch.

Conclusions

Prevalence and severity of gingival recessions increased during orthodontic treatment and annually, with almost 39% of the patients with at least one GR at 5 years of follow up. The most affected teeth are the upper first premolars, upper first molars, lower first premolars and lower central incisors. Previous orthopedic treatment seems to be protective on the occurence of GR while the presence of less than 2mm of KTH at baseline seems to be a risk for the occurence of GR.

R15 Harvest of Epithelialized Gingival Grafts with or without application of Haemostatic Sutures: A randomized controlled trial assessing the dynamics of palatal revascularization by laser speckle contrast imaging

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Aim

There is a lack of knowledge regarding which is the most efficient way to manage haemostasis after harvesting an epithelialised gingival graft (EGG), leading to potential over-treatments. The aim of this randomized controlled clinical trial was to compare early microvascular healing and patients related outcome measures

(PROMS) after harvesting an EGG where haemostasis was achieved with compressive sutures and haemostatic sponges (control) or with a simplified suture-less approach (test).

Materials and Methods

The study protocol was registered on Clinicaltrials.gov (NCT05381623) and approved by the local ethical committee (Code: 22/244-EC_X). Patients were harvested of an EGG within the context of a mucogingival surgery and post-harvest haemostasis was achieved with either collagen sponges and compressive sutures (control, n=16) or with the sole local injection of articaine 4% with 1:100.000 epinephrine without applying any pressure, in order to allow the establishment of a stable blood clot over the harvesting site (test, n=16). The primary outcome was the palatal blood flow measured with Laser Speckle Contrast Imaging (LSCI), expressed in Laser Speckle Perfusion Units (LSPU), assessed at 7, 14, and 30 days. A figure of 16 subjects per group was obtained based on an expected difference of 7 LSPU, a SD of 6.3 SLPU (Molnar et al. 2019), 80% power, alpha 0.05, and assuming a foreseen drop-out rate of 15%. The secondary outcome was the patients related outcomes measures, including the occurrence of haemorragic events, the postoperative pain, and the consumption of rescue analgesic medications. Data were collected at 4, 8, 12 and 24 hours after surgery, and daily for the first postoperative week, using a dedicated questionnaire. The exploratory outcomes were the average clinical time saving associated with the test vs. control approach and the pattern of palatal revascularization after the harvest of an EGG, using an innovative technology as Laser Speckle Contrast Imaging (LSCI).

Results

7 days after surgery, palatal hyperaemia was observed at the harvested hemipalates of both groups, albeit it was more pronounced in the test, where the change from baseline reached statistical significance at most ROIs, (ROI 1 test - baseline: 300,80 ± 51,23 LSPU; 7d: 400,00 ± 116,94 LSPU; Δ = -99,20 LSPU; p=0,027). At 14 days, the test group showed an overall reduction of the hyperaemic response at the ROIs surrounding the harvest site (ROI 2 to 5) and the persistence of hyperaemia at ROI1, while

the control group showed an increase in hyperaemia, reaching similar LSPU values as the ones observed in the test at 7 days (ROI1: 415,13 ± 89,72 LSPU; Δ ROI 6-1: -156,43 ±76,58 LSPU). 30 days after surgery, the hyperaemic response was resolved at both test and control palates, showing blood flow values equivalent to the baseline ones at all ROIs. No statistically significant differences were observed for postoperative bleeding, swelling, pain and analgesic consumption at all timepoints (p>0,05). A small tendency towards higher postoperative pain was observed in the test group, at different timepoints, with the highest difference at 6 days almost reaching statistical significance (test: 2,22 ± 2,70; control: 0,75 ± 0,85; Δ = -1,473, p=0,063). However, such tendency did not translate in higher consumption of the rescue medication at any of the evaluated timepoints. The mean surgical time was 13 minutes shorter in the test group (p=0,00).

Conclusions

The pattern of palatal revascularization after EGG harvesting is characterised by an initial hyperaemic response, involving both the harvest site and the neighbouring areas, and a subsequent progressive re-establishemt of baseline values, which appears to begin from the periphery of the harvest site, and proceed in a centripetal direction, being complete at 30 days. Such process appeared to be faster in the test group, where vivid hyperaemia was present at 7 days and an initial reduction of the hyperaemic response could already be observed at 14 days around the harvest site. In the control group, such response appeared to be slowed down by the presence of a compressive haemostatic suture, as peak hyperaemia was achieved at 14 days, reaching LSPU values similar to the test ones at 7 days. While the test approach provided a significant and clinically relevant surgical time reduction (Δ = 13min; p=0,000), no significant differences could be observed in any of the recorded PROMS.

R16 Periodontal health and oral hygiene in hospitalized hypertensive patients with implants

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Aim
The aim of this cross-sectional study is to evaluate how the presence of dental implants in hospitalized patients with hypertensive pathology influences oral hygiene and therefore periodontal health.
Materials and Methods
For this study, there were selected 24 hospitalized patients with high blood pressure (15 male and 9 female) - the test group, and the control group of 30 patients (19 male and 11 female), both cardiovascular and periodontal healthy - the control group. Of these, in the test group, 4 patients had dental implants, while in the control group, were 5 patients with implants. Periodontal probing depth (PPD), the amount of plaque deposits - plaque index (PI) and the bleeding on probing (BOP), and the number of remanent teeth were analysed. The t-student test analysis was used for the statistic comparisons between groups, with p-value < 0.05 for statistical significance.
Results
The total number of teeth analyzed was 673 (162 teeth from the hypertensive patients with an average of 12.95 teeth/patient; and 511 for the control group with an average of 17.03 teeth/patient). The test group had a mean age of 62,2 years old, and the control group had a mean age of 47,4 years old. The demographic parameters not showing any discrepancies between the groups. The general oral hygiene was better in the control group, with a mean PI of 24,1% while for the hospitalized hypertensive patients had a mean of 73% with a significant statistically difference.

Conclusions

Patients with high blood pressure are more likely to loose teeth. Also, the oral hygiene of the hospitalized patients with hypertension and implants is better than for the hospitalized patients with the same disease and no implants, but still worse than the hygiene of the healthy patients from the control group that were not hospitalized. It could be stated that the oral care following the instructions of the dentist and the overall consciousness of the patient treated with implants have shown a decrease in the values of PQL, PPD and BOP. The hospitalization seems to be a demotivating factor for the oral hygiene care for hypertensive patients.

R17 Assessment of periodontal phenotype around maxillary and mandibulary anterior teeth region using cone beam computed tomography

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Aim

The purpose of this study was to assess the relationship between vestibular gingival thickness, gingival width and labial bone dimension in maxillary and mandibulary anterior teeth region using cone beam computed tomography (CBCT).

Materials and Methods

156 maxillary and mandibulary anterior teeth in 13 adult patients were assessed in this study. Gingival thickness was measured using transparency of periodontal probe through the buccal gingival margin method (TRAN). Gingival width (GW) was measured as a distance between gingival margin and mucogingival line. The distance from cementoenamel junction to bone crest (BC-CEJ) in sagittal plane was measured on CBCT scans. Labial bone thickness was also measured on CBCT scans in three points: 3 mm apical to

the CEJ (LBT_3), at the apex of the root (LBT^a), and third one located at the midpoint between LBT_3 and LBT^a (LBTm), in the midbuccal aspect perpendicular to the axis of the tooth. All statistical analyses were done using Statistical Package for Social Science (SPSS software package, version 26.0; SPSS Inc., Chicago, IL, USA).

Results

The GW, BC-CEJ and LBT_3 around the maxillary central and lateral incisors and canine teeth were significantly different between jaws ($P< 0.001$), age ($B = 0.157$; 95% CI: 0.106 – 0.208; $p<0.001$).

Conclusions

Our data support the information from contemporary literature about two different periodontal biotypes which differ by gingival transparency of periodontal probe. Gingival width, gingival thickness and labial bone thickness varies according to dental arch and also between group of teeth. Group of teeth, LBTa, age, cigarette smoking, are found to be independent predictors which describes 62% of variances regarding GW. On the other hand, group of teeth, jaw, LBTm are found to be independent predictors which describes almost 50% of variances regarding LBT3.

R18 Comparative evaluation of marginal tissue recession managed with envelope technique in combination with acellular dermal matrix graft and with connective tissue graft

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Aim

The aim of this study is to compare the effectiveness of envelope technique for management of marginal tissue recession using acellular dermal matrix graft (ADM) in one group and connective tissue graft(CTG) harvested from palate in another group.

Materials and Methods

A total of 16 patients with 34 Miller Class I multiple recessions were included and divided into ENV+ADM and ENV+CTG groups. At baseline and 12 months, clinical parameters recorded were probing depth (PD), clinical attachment level (CAL), recession height (RH), recession width (RW), keratinized tissue height (KT), gingival thickness(GT), and complete and mean root coverage (CRC, MRC). Patient satisfaction was measured in terms of visual analog scale(VAS) scores for hypersensitivity due to the exposed root surface.

Results

Mean root coverage was 91.32% in ENV+ADM and 94.73% in ENV+CTG. Intergroup differences were comparable and were found to be statistically insignificant for RH and RW reduction, KT increase, CAL gain, MRC, CRC .

Conclusions

Both techniques were effective in root coverage of multiple recessions. However, ADM is a reliable and predictable substitute, especially in cases where CTG harvesting is not possible such as patient preference or lack of donor tissue.

R19 Patient-centered and clinical reported outcomes of early wound healing following alveolar ridge preservation technique - A Case Series

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Aim

There is a well-documented literature on the alveolar ridge preservation (ARP) technique, which has been proven to reduce ridge shrinkage during the healing process of extraction sockets. It has been argued that the technique of ARP procedures performed may affect patient morbidity and wound healing in the early stages. Thus, this case series highlighted the patient-reported and early wound healing outcomes following ARP flap procedure utilizing a guided bone regeneration (GBR) approach.

Materials and Methods

Four fit and healthy patients planned for ARP were enrolled in the study. The tooth was extracted atraumatically after a full-thickness flap was raised. The extraction socket was immediately grafted with spongious bone substitute particles (deproteinized bovine bone mineral (90%) in a collagen matrix (10%) (DBBMC). Prior to the primary closure of the flap with multiple modified Laurell suture technique, a bilayer, synthetic resorbable membrane (Poly-Lactic Glycolic Acid (PLGA)) was utilized covering the socket. Visual analogue scale (VAS) was evaluated immediately after surgery, on day two and one week after surgery. Meanwhile, early wound healing was evaluated using early healing index (EHI) two weeks post-surgery.

Results
The VAS evaluation showed absence of post-operative pain after seven days. The score of EHI for case I and II, and III and IV was 3 and 5 respectively.
Conclusions
In conclusion, it appears that the type of early wound healing following flap procedure of ARP does not affect the tolerance to pain of patients.

R20 Are there indications for the use of Enamel Matrix Derivative in peri-implant tissues? A systematic review of clinical trials

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Aim
The use of growth factors to enhance tissue healing around dental implants and treat peri-implant diseases is a promising field and has been largely studied. However, there is no consensus regarding the use of enamel derivate proteins (EMD) in peri-implant tissue. This systematic review aimed to answer if the use of EMD can improve the healing process of peri-implant tissues and treat peri-implant diseases.
Materials and Methods
7 databases (Pubmed, Embase, Cochrane, Google Scholar, Clinical Trials, Scielo, and Lilacs) were searched and updated to September 2022, by 3 independent reviewers using MeSH terms and keywords. The inclusion criteria were clinical studies evaluating the use of EMD in the treatment of systemically healthy patients undergoing (i) dental implant placement or (ii) treatment of peri-implant diseases (peri-implantitis and mucositis).
Results
A total of 4809 articles were found and 6 studies completely fulfilled the present systematic review's inclusion criteria. 2 studies investigated the use of EMD in the healing of peri-implant tissues,

with inconclusive results about its benefits to improve osseointegration and reduce post-operative complications. For the studies regarding the treatment of peri-implant diseases, EMD reduced probing depth and bleeding on probing, and reduced the levels of Porphyromonas gingivalis.

Conclusions

Although it is a promising field, there is lack of evidence to support the use of the use of EMD as a biomaterial in the healing of peri-implant tissues. Regarding the use of EMD in the treatment of peri-implant diseases, there is very low evidence to support its use. This systematic review highlights the need for further studies on the subject.

R21 Evaluation Of Patients' Gingival Health Awareness

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Aim

Gingival recession (GR) is a prevalent gingival deformity causing hypersensitivity and aesthetic problems. The aim of current cross-sectional study is to determine whether the risk factors that increase the susceptibility of patients to gingival recession are present, and to evaluate the patient perception and awareness of the issue.

Materials and Methods

Thirty-two subjects were enrolled in the current pre-liminary study. At baseline, intraoral photographs were taken, demographic data and clinical periodontal parameters including probing depth (PD), gingival recession (GR), clinical attachment level (CAL), bleeding on probing (BoP) and plaque index (PI) were recorded by an experienced examiner. The patients were asked to fill out 'My Gum Recession Analyzer (www.gumtest.com)' questionnaire. The consistency of patient responses in comparison to clinical examination and the association of risk factors with GR were

evaluated. Descriptive statistics and Pearson correlation test was performed with SPSS program.

Results

Clinical examination revealed that 59.3% of the patients had GR, whereas 81.25% of the patients reported to have GR as a result of their self-evaluation (p0.05). Among the demographic variables, only age was significantly associated with the presence of GR (p= 0.002, r= 0.522), whereas there were no association of GR with gender (p=0.154, r=-0.258) and education level (p=0.262, r=-0.204). There was significant association with gingiva thickness and hypersensitivity in teeth sites with GR according to patient perception and (p= 0,25, r=-0,396). Acceptance of surgical treatment for GR was positively correlated with education level (p=0,015, r=0,426).

Conclusions

In our preliminary study, although there was a difference in the detection of GR by the patients and the clinician, there were no differences between the patient and clinical evaluation of possible risk factors. The control of risk factors plays substantial role in the clinical management and prevention of gingival recessions. Employment of chairside tools may be beneficial for patient education and to increase the patient awareness. Thus, in turn elimination and long-term control of risk factors might be helpful in the prevention of disease progression and increase the treatment success rate.

R22 Clinical and radiographic evaluation of intra-bony periodontal defects treated with hyaluronic acid or enamel matrix proteins. Preliminary results

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Aim

The aim of the study was to compare the regenerative effect of hyaluronic acid versus enamel matrix proteins at 6-months after surgical treatment of periodontal intra-bony defects.

Materials and Methods

We report here data from the first 20 treated patients (out of 50) included in the main randomized, prospective, double masked controlled clinical trial. Patients were nonsmoking, systemic healthy, 9 woman and 11 men, mean age 46.5+/-7.2 years, diagnosed with generalized periodontitis grade III and IV with at least one intra-bony defect site. Selected sites were divided randomly into control (treated with Emdogain®), and test (treated with hyaluronic acid - Hyadent BG, Regedent). An experienced surgeon performed identical surgeries in all patients, except the regenerative products. Clinical and radiographic parameters were recorded at baseline, one week prior to surgery, and were followed up six months after: clinical attachment level (CAL), probing depth (PD), gingival margin level (GML) and on radiographs the vertical distance between the bone crest and the site on the root surface at which the periodontium width was normal (BC-BD, at the deepest measured point, in mm). U-Mann–Whitney test was used for inter-group comparison, the Wilcoxon test for intra-group changes from baseline to follow-up.

Results

At follow-up, both groups showed statistically significant reductions in PD and CAL [test-PD (p=0.005), CAL (p=0.008) respectively

control-PD (p=0.0051), CAL (p=0.0215)], however GML and BC-BD did not significantly change in the test group, p=0.395 respectively p=0.054 while they decreased in the control group (p=0.012, respectively p=0.005). The inter-group comparison showed that there were no significant differences between groups in all investigated parameters.

Conclusions

Preliminary findings show that, at 6 months, there are no significant differences in clinical and radiographic parameters between defects surgically treated with hyaluronic acid or enamel matrix proteins.