

Implant Innovations Inc.), sized 3.75x11.5mm were placed in the canine and premolar regions simultaneously with sinus lifting and autogenous bone grafting, harvested from the mandibular symphysis. Following a healing period of 6 months, the site was reopened in order to expose the implants to the oral cavity and initiate the restorative phase of treatment. Results and grafting the maxillary sinus with autogenous bone and simultaneous implant placement resulted in implant osseointegration and an expressive gain of height in the alveolar process by means of radiographic and clinical assessments, allowing an appropriate anchorage for the fixed prosthesis.

#### Gingival papilla in critical Implantology: esthetic aspects

Frias, S.O.; Sant'Ana, A.C.P.; Passanezi, E.; Rezende, M.L.R.; Greggi, S.L.A.

The process of osseointegration and all the prerequisites for its attainment are essential for implant success. However, implant success cannot be analyzed only with respect to osseointegration and recovery of masticatory capacity, but the esthetic aspects should also be considered, especially in the jaw. The implant-retained prosthetic crowns should be similar to natural teeth regarding form, color, size, etc. It is mandatory that the gingival tissue has adequate conditions. The peri-implant gingival tissue must present characteristics, such as apical regular parabolic contour in the free surfaces compatible with that of natural teeth and more coronal in the proximal areas, a rose-pale coloration, amongst others. An aspect in particular that concerns periodontists and implantodontists is the need of having a gingival papilla completely filling the interdental spaces in the proximal areas, preventing the occurrence of voids ("black empty spaces"), which can undoubtedly compromise the final rehabilitative quality of the implant. Thus, some aspects must be analyzed in the planning phase of implants, such as: the periodontal condition of the adjacent teeth, space adjusted for the set of implants, excellent position in implant installation, implant diameter in relation to the existing space, etc.

#### Reconstruction of atrophic alveolar edge with allografts: case report

Filho, E.V.Z.; Farah, G.J.; Filho, L.L.; Pavan, A.J.; Jacob, J.; Camarini, E.T.

Although dentistry has greatly evolved in the past decades, the rehabilitation of severely reabsorbed edges continues to be a challenge. With the advent of osseointegrated implants, more attention has been given to this problem. Several techniques and materials have been developed aiming at reconstructing bone losses, the golden standard in these cases being the use of autogenous bone, due to its biological characteristics of osteogenesis, osteoinduction and osteoconduction. However, they present drawbacks and limitations that increase the risk of morbidity and the costs to the patient. To overcome these shortcomings, there is the option of bone transplantation with the use of a bone bank. These bone samples are removed from individuals who are organ donors, and go through a process to prevent immunogenic reactions and to ensure that they do not transmit any type of pathology to the recipient. They can be used for the reconstruction of the atrophic alveolar edges, avoiding the need for a second donating area and providing enough amounts of tissue in each case. This work had the objective to present a case of reconstruction of atrophic alveolar edge with a graft from a bone bank, as well as to discuss about its biological aspects.

## Operative Dentistry

#### Harmonic esthetic rehabilitation in a patient with dental wear

Melo, J.C.P.; Furuse, A.Y.; Mondelli, J.

Tooth wear is one of the most complex processes and involves mechanical, thermal and chemical causes. Currently, tooth wear due to the bruxism is increasingly more present in daily clinical practice. This parafunctional habit has been related to stress and the current life style, which have led to an increase of its incidence in the worldwide population. To treat tooth wear resulting from bruxism, the dentist must have knowledge of the dental anatomy and optical behavior of tissue, as well as know how to evaluate and stabilize the temporomandibular joint in centric relation. In this way, the objective of this work was to report a case of generalized tooth wear with boarding for harmonic esthetic rehabilitation. Tooth wear was treated by restoration of the anterior guide with composite resin and further occlusal adjustment with the R.O.C.A system. This treatment allowed the attainment of a steady harmonic anteroposterior relation, with improvement of the maximal habitual intercuspation. Moreover, the adequate passage of the anterior guide was established. The treatment approach accomplished in the present case provided to the patient a pleasant and balanced esthetic smile by means of a reversible, conservative and less costly procedure.

#### Advantages and limitations of glass fiber posts

Oswaldo, M.V.A.; Melo, J.C.P.; Kegler, E.; Freitas, C.A.

One of the last levels of prevention, in the health field, is the limitation of the damage, which involves the preservation, as much as possible, of the healthful portion of a damaged tissue. In Dentistry, it occurs in the cases where little remaining dental structure exists, forcing the dentist to use a root canal post, which will make possible the subsequent setting of the respective crown. The posts can be metallic, casted and later cemented, or can be obtained from distinct materials (either metallic or not), but fabricated from different methods. Glass fiber posts are included in this last group. The objective in this work was to address the advantages and limitations of this type of post, as well as present some of its possible clinical applications. Glass fiber posts can substitute metallic post advantageously, when esthetics is important, as in case of transparency caused by little thickness of the dental remainder, in the buccal region. The advantages of glass fiber posts are their modulus of elasticity very close to that of dentin and low thermal and electric conductivity. Moreover, the material is easy to handle (during fabrication of the core as well as during its eventual removal) and has good cost-effectiveness relation. Although glass fiber posts have been extensively used, perhaps due to their clinical ease of fabrication, there are limitations imposed by their properties, such as the small shear and tensile strengths. Therefore, this material should only be used when there is a reasonable amount of remaining dentin.

#### Evaluation of marginal adaptation of indirect restorations using the resin-coating technique after load cycling and thermocycling

Correa-Medina, A.; Di Hipólito, V.; Góes, M.F.; Sinhoret, M.A.C.

The aim of this study was to evaluate the marginal adaptation of indirect restorations, using different combinations of the "Resin Coat Technique" (RCT), after load cycling and thermocycling. Twenty human molars were used. In each tooth, two cavities were prepared, one on the mesial surface (margins in enamel-ME) and the other on the distal surface (margin in dentin- MD), adding to a total of 40 cavities, which were assigned to four groups. In G1ME and G2MD, a combination of 1-step self-etching adhesive and low viscosity resin (Clearfil S3/ Protect Liner) was applied. An association of 2-step self-etching adhesive and low viscosity resin (Clearfil SEBond/ Protect Liner) was applied to the specimens in G3ME and G4MD. After applying the RCT, impressions were taken from the cavities and poured with stone plaster. The fillings were fabricated using the Sinfony system (3M/ESPE) and were cemented with a resin-based cement (Rely X ARC). After 24 hours, the teeth were submitted to thermocycling (2,000 cycles/5-55°C) and load cycling (250,000 cycles – load 100N) followed by the application of Caries Detector (Kuraray) upon all restoration margins and washing for 30 s. Images were captured and evaluated using Image Tool 3.0 software for assessment of dye penetration and percent conversion. The results were submitted to ANOVA and Tukey's test ( $p < 0.05$ ). The mean values (%) were: G1ME=36.42; G2MD=28.08; G3ME=15.21; G4MD=17.23. There was statistically significant difference among the groups. G3ME and G4MD had significantly better results than G1ME and G2MD ( $p < 0.05$ ). It may be concluded that when the RCT was used in association with a 2-step self-etching adhesive + low viscosity resin there was a better marginal adaptation than that observed when instead a combination of 1-step self-etching adhesive + low viscosity resin was used. There was no statistically significant difference between the adaptation of the restorations with margins in enamel or dentin after load cycling and thermocycling.

#### Anterior Esthetic-Functional Rehabilitation: Multidisciplinary Approach

Brito, C.A.B.; Boaventura, J. M. C.; Padovani, G.C.; Queiroz, R.S.; Porto-Neto, S.T.; Candido, M.S.M.

Dentistry follows paths that go beyond the restorative techniques, looking for the reestablishment of function allied to dental esthetic, thus fulfilling the patients' expectations and welfare. The obtaining of a harmonious smile, in many cases, demands a multidisciplinary approach involving several dental specialties. The constant evolution of restorative materials (resin-based cements, dental ceramics, non-metallic pins and adhesive systems) and techniques make possible the achievement of an excellence esthetics, which has increased among patients' requests. The aim of this work was to emphasize the importance of a multidisciplinary approach for complete functional and esthetic rehabilitation, as exemplified with a case report. The patient B.A.S looked for treatment motivated by the need of improving the esthetics of his anterior teeth. During the past history review, the patient reported a root canal treatment of tooth 11 and placement of an acrylic crown, without painful symptomatology. The clinical exam revealed healthy periodontal tissues, absence of dental structure loss, esthetically unsatisfactory crown on tooth 11, as well as darkening of tooth 21. The radiographic examination of the area showed a periapical lesion associated with tooth 21, suggesting the need of endodontic treatment. Thereafter, the treatment plan comprised subsequent bleaching (immediate in-office technique) of tooth 21; placement of an intraradicular retainer in tooth 11 (non-

metallic esthetic post - glass fiber post, due to the presentation of more than 2 mm of coronal remainder after preparation) and placement of an all-ceramic crown (IPS EMPRESS II) on tooth 11. The excellent esthetic and functional results were only reached due to the appropriate planning, integration of several procedures and materials available in modern dentistry, associated with a good work performed by the prosthetic technician.

#### **The action of the acidulated and neutral fluorides in the reorganization of human dental enamel after bleaching with led/laser: a scanning electron microscopic study**

Ferreira, S.S.; Morhy, O.N.; Tapety, C.M.C.; Araújo, J.L.N.

There are several possibilities of esthetic restorative treatments. However, with the evolution of the bleaching techniques, tooth bleaching has been considered the first option in cases of color alteration for being considered a less invasive and conservative intervention. The purposes of this study were to evaluate morphologically by scanning electron microscopy (SEM) the structure of human dental enamel submitted to bleaching with 35% hydrogen peroxide activated by light LED/laser, and to analyze two possible treatment alternatives for the bleached enamel surface using two fluoridated agents that could aid in its morphological reorganization. Forty intact human premolars extracted for orthodontic reasons were sectioned in a mesiodistal direction and at the cemento-enamel junction, the buccal sections being allocated in four groups. After receiving three applications of the bleaching gel and final burnishing, the experimental groups (GII, GIII and GIV) were submitted to different surface treatments. This procedure was repeated 7 and 14 days later. GII did not receive any surface treatment, GIII received 1-minute application of 1.23% acidulated fluoride gel, and GIV, 2% neutral fluoride gel for the same period. The specimens were stored in artificial saliva 37°C between sessions. The control group (GI) remained stored in this solution throughout the course of the study. SEM analysis showed that the specimens presented superficial irregularities and porosities, in different degrees, being evaluated by a score system. Kruskal Wallis statistical test revealed that only GI and GIII differed significantly to each other, showing that the 1.23% acidulated fluoride gel is capable of become evident the alterations in the morphology of the enamel, whereas the 2% neutral fluoride gel has a trend to revert this process.

#### **Marginal infiltration on Class V restoration**

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Although the restorative dentistry is highly committed to esthetics, its main goals remain the preventive and healing aspects. In spite of the clinically proved and research-supported efficiency of contemporary adhesive systems, failures in adhesive process still occur. Therefore, the industry of biomaterials is constant evolution. There is a continuous claim for the development of research projects intended to deal with the problems of integration between new materials and tooth structure. The purpose of this study was to compare the marginal infiltration degree of class V composite restorations at gingival and occlusal margins. Single Bond (3M/ESPE), Self Etch Bond (Vigodent), Xeno III (Dentsply), Magic Bond (Vigodent) and Multi Bond Uno (DFL) adhesive systems were used. Thirty-five extracted human teeth were selected and allocated in 5 groups (n=7). Seventy standardized cavities were prepared on the cervical third of buccal and lingual surfaces. The adhesive systems were applied according to the manufacturer's instructions, being a system *per* group. Concept (Vigodent) composite resin was used as the restorative material. Thereafter, the specimens were submitted to a tracer agent staining on thermocycling and prepared for analysis. The infiltration degree was determined by dye penetration extension used in the thermocycling regimen. The statistic analysis showed that Single Bond and Multi Bond Uno had similar behavior in enamel, providing better results. The worst results in enamel were obtained with Self Etch Bond. In dentin, Self Etch Bond and Multi Bond Uno had the best results, whereas Xeno III presented the least desirable results.

#### **Stress distribution at dentin/adhesive interface after self-etching adhesive system application. Study by finite element method.**

Anchieta, R.B.; Junior, M.M.; Archangelo, C.M.; Sundfeld, R.H.; Rocha, E.P.

Although self-etching adhesives have been claimed to have advantages on hybrid layer (HL) formation, such as lower working time, there are no studies investigating stress distribution at dentin/adhesive interface (D/A) by finite element method (FEM). Thus, the objective of this study was to analyze, by two-dimensional FEM, the stress distribution at the D/A interface. For such purpose, 5 groups (G) were established with two HL thicknesses and 2 tag lengths, as follows: G1- dentin specimen without any conditioning procedure and restored with composite resin (CR); G2 - similar to G1, with 3 µm for HL thickness and 19 µm for tag length; G3

- similar to G2, with 3 µm for HL and 17 µm for tag; G4 - similar to G2, with 6 µm for HL and 19 µm for tag; and G5 - similar to G2, with 6 µm for HL and 17 µm for tag. Two tensile forces (20N), either perpendicular (C1) or oblique (25°) (C2), were applied to the CR surface. The finite element program Ansys 10.0 was utilized for the numerical analysis. HL thickness variation did not change the stress distribution in the HL itself. However, there was an increase of stress in the other structures (tag, peritubular and intertubular dentin). The variation of tag length did not change significantly the form the stress. The perpendicular and oblique loading provided similar manners of stress distribution. Nevertheless, the stress level was 4 times higher for the oblique loading. In conclusion, HL thickness influenced more the stress distribution than the tag length.

#### **Characteristics of TMJ noise analyzed by electrovibratography**

Crosio, D.M.; Carrasco, T.G.; Hotta, T.H.; Mazzetto, M.O.; Venezian, G.C.; Silva, M.A.M.R.

Studying temporomandibular joint (TMJ) noise is an important parameter for diagnosing temporomandibular dysfunctions. In this study, eight groups (n = 9) were formed according to TMJ dysfunction classification provided by a vibration analysis equipment. Parameters for analyzing TMJ noise were: total vibration energy, peak amplitude, and peak frequency. Mouth opening range was also analyzed. Statistical analysis results for each parameter were significant at the level of 1%. Each analyzed group presented different noise characteristics. This allowed for inclusion of the groups within a determined value category. The patient group with normal condyle/disk relationship always presented the lowest values. The type of TMJ joint noise was characterized by analyzing total integral noise, peak amplitude, peak frequency, and mouth opening. Analyzing joint noise by electrovibratography suggests the type of joint dysfunction and may help in diagnosis as well as in treatment plan.

#### **How to reproduce the optical properties of teeth with direct composite resin and ceramic material**

Calixto, L.R.; Lins, F.F.; Clavijo, V.; Kabbach, W.; Mendonça, A.A.M.; Silva, A.O.; Andrade, M.F.

Patient demand regarding having teeth with good shape and natural color is a reality in the current dentistry, and the placement of "invisible" restorations became a very important requirement in the search of a satisfactory esthetic treatment. In this context, it is of paramount importance to know the optical properties of dental tissues and restorative materials alike. The success of the restorative treatment is determined by the clinical behavior of these materials, which must be similar to that of natural teeth. The color of teeth is determined by the amount of absorbed and refracted light, and mainly reflected, and its behavior is dependent on the region of the teeth. There are regions with greater amount of enamel, which are more translucent, while others have a greater amount of dentin, being thus, of less translucent (or more opaque). These phenomena must also be reproduced in direct and indirect restorations. Moreover, some important properties such as fluorescence, opalescence, translucence are present in the natural dental structures, and must be also present in the chosen restorative material. Therefore, the objective of this work was to demonstrate these optical properties and to show how to mimic ceramic and the resin restorations in the different areas of the teeth.

#### **Adhesive composite restorations to close diastemas and reshape maxillary incisors: case report**

Apayco, L.C.C.; Mondelli, R.F.L.; Baseggio, W.; Sampaio, P.C.P.; Atta, M.T.

Alternatives that result in minimally invasive esthetic treatments, conservation of dental structure and durability of restorations are a concern in Dentistry nowadays. Diastema is one of the problems that cause, in many patients, permanent discomfort and, for the dentist, is a challenge to reproduce the shape and color of teeth and harmony with dentofacial composition. This case report presents the use of a composite resin with color stratification technique and a silicone matrix in a young woman with cosmetic concerns regarding her maxillary incisors with diastemas between teeth 11 and 21 and loss of the incisal edge of the lateral incisors. A preoperative impression was obtained with alginate to record the existing maxillary condition. The treatment planning was done by waxing the stone model to reproduce the desired shape and size and a silicone matrix was obtained to be used as a guide. Filtek Supreme Z350 composite resin was then applied according to a color stratification technique (body A2B, enamel A2E and translucent YT) to reshape the lateral incisors and close the diastema. Finally, the restorations were polished to optimize the esthetic results. Finishing and polishing procedures were done with 24-blade carbide burs, Diamond pro and Diamond flex with a Diamond paste (FGM). The immediate final outcome and the 1-year control showed that, in addition to being clinically adequate this treatment approach provide satisfactory esthetics.

**Cosmetic reshape by direct composite resin technique - closing of diastemas in anterior teeth**

Lima, J.P.M.; Boaventura, J.M.C.; Júnior, M.E.S.; Candido, M.S.M.; Neto, S.T.P.

Currently, esthetics is one of the greatest challenges of Dentistry. Dentists are frequently approached by patients that are unsatisfied with the harmony of their smile and, one of the cases that more commonly cause patient dissatisfaction is diastema in anterior teeth. The clinical practice requires more and more a correct planning and easily accomplished procedures, ahead of a more demanding and clarified population. The settlement of a treatment plan makes the dentist more confident to handle the case. In view of the issues mentioned above, this work reports a case of the transformation of maxillary anterior teeth by altering the space proportion between them. A direct composite resin technique was used for closing the diastemas, comprehending an accurate esthetic planning and smile harmonization based on the golden proportion obtained directly from the plaster model and accomplished by case waxing. This restorative technique considerably facilitates the work of the dentist with regard to cases of greater esthetic complexity. The treatment involved small superficial grinding on enamel surface in order to reshape the involved teeth. The outcomes of this case demonstrate that this treatment approach has a simple planning and is easy to perform, with a reduced clinical time (two sessions in this case).

**Cytotoxic effects of different concentrations of chlorhexidine on the odontoblast cell line MDPC-23**

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The aim of this study was to evaluate the cytotoxic effects of different concentrations of chlorhexidine gel (Chx) to an immortalized odontoblast-cell line (MDPC-23). The cells (30,000 cells/cm<sup>2</sup>) were plated into 24-well dishes (6 wells *per* group) and incubated for 72 hours. After this period, the complete culture medium (á-MEM) was replaced by fresh á-MEM mixed with Chx gel in such way that the following experimental groups were established: Group 1: Chx 0.06%; Group 2: Chx 0.12%; Group 3: Chx 0.2%; and Group 4: Chx 1%. In Group 5 (control) the cells remained in fresh á-MEM. After 2-hour incubation of the cells in contact to the experimental Chx preparations or control solution, the cell metabolic activity was assessed by the MTT assay, which measures the mitochondrial respiration of the cells. The numeric data obtained from the MTT assay were submitted to the statistical analysis of Mann-Whitney. In Groups 1, 2, 3, and 4 the cell metabolism decreased by 77.5%, 81.0%, 81.0%, and 82.5%, respectively. The difference between these experimental and the control groups was statistically significant. Regarding the Chx preparations, it was observed statistically lower cytotoxic effects in Groups 1, 2, and 3 than in the Group 4. According to the experimental conditions, it was concluded that all concentrations of Chx preparations caused intense cytotoxic effects (more than 75% of cell metabolism inhibition) when applied directly on the cultured MDPC-23 cells.

**Surface roughness of condensable composite resins: effect of surface polishing**

Boaventura, J.M.C.; Padovani, G.C.; Queiroz, R.S.; Lima, J.P.M.; Cândido, M.S.M.; Porto-Neto, S.T.

The aim of this study was to evaluate, comparatively, the surface roughness of composite resins as a function of the finishing and polishing technique. Microhybrid (M1: Z100™ - control group) and Condesable (M2: P60™, M3: Prodigy Condensable™, M4: Surefill™) composite resins were selected. Thirty circular specimens with dimensions of 5x2mm were fabricated for each material and stored in saliva substitute at 37°C, for a 24-hour period before the accomplishment of polishing procedures and surface roughness reading. The resins were allocated to two polishing techniques: (P1) without superficial polishing and (P2) polishing with sandpaper (polishing machine) and subsequent polishing with felt disc with abrasive paste. Surface roughness was evaluated by using a profilometer (Digital Profilometer Prazis Rug-03) with three measurements *per* specimen. The values were analyzed statistically by analysis of variance (p>0.05). The results revealed statistically significant differences among composite resins as pronounced as between the polishing techniques. It may be concluded that, for all types of composite resin, surface roughness was less accentuated in P1 compared to P2; and that the M3 material presented the lesser roughness, followed by an increasing sequence with M1>M2>M4.

**Quantitative analysis of the capacity of translucent posts in transmitting luminous energy in its different depths**

Morgan, L.F.S.A.; Pinotti, M.B.; Albuquerque, R.C.; Poletto, L.T.A.; Peixoto, R.T.R.C.; Albuquerque, R.C.

The study evaluated quantitatively the luminous energy transmitted in the different depths of several fiber posts. Ten glass fiber posts (White Post DC®, DT Light Post®, Aestheti Post®, C-Post®, FRC Postec®, Cosmopost®, Fiberkor Post®, Exacto®, Reforpost Mix® e Reforpost®) were inserted into black resin blocks. The specimens were cut with a precision machine (Isomet 1000, Buehler) and the depths of 12, 8, 4 mm and top surface were assessed. The light-transmitting measurements were done using a digital power measuring equipment (NOVA, OPHIR). The accuracy of the positioning of the light-curing unit (Curing Light 2500, 3M ESPE) in relation to the specimen was assured by a custom-made metallic mold, especially fabricated for this experiment. Data were submitted to the Kruskal Wallis test (p<0.05). At the depth of 12mm, FRC Postec was the post with higher luminous energy, which was similar to that of the control specimen. However, at the depth of 8mm, the posts White Post DC and DT Light Post presented similar values to the control and higher than that of FRC Postec. At the depth of 4mm, White Post DC was similar to the control presenting the highest values, and Exacto presented the lowest value. FRC Postec and DT Light Post were intermediate to those. The other posts did not present significant values at these depths. On the top surface, White Post DC was similar to DT Light Post and FRC Postec, even though it was lower than the control. C-Post presented the lowest value. The following conclusions were drawn: the amount of transmitted luminous energy depends on the type of post. There was a significant decrease in the amount of light transmitted by all posts with the increase of depth. Even without the post, the luminous intensity inside the duct seems to decrease to insufficient levels for polymerization especially in the apical third.

**Reestablishment of anterior guide in tooth wear patient**

Chiok-Ocaña, L.; Gonzalez-Bernal, H.; Mondelli, R.L.; Pereira, J.C.; Mondelli, J.

Stress determined by the modern society together with the esthetic demands and behavioral changes can be responsible for alterations in the stomatognathic system. Bruxism presents as the main oral pathology related to psychological alterations; it is associated with maxillary discrepancies, causes wear on incisal and occlusal tooth surfaces and loss of dental hard tissue. Depending on its severity, it can compromise the smile esthetics and the occlusion. Tooth wear is a common problem of multifactorial origin in the dental practice, and its rehabilitation can be made through direct adhesive restorations, making the treatment more accessible to the patient. The aim of this work was to review and discuss the most relevant aspects of tooth wear, by reporting a case in which esthetics and function were recovered, consequently increasing patient comfort.

**Technique of sculpture with occlusal matrix in posterior tooth**

Moraes, M.L.L.; Franco, M.H.M.; Leandrini, J.C.S.

The purpose of this work was to describe the occlusal sculpture technique in posterior teeth using composite resin. In recent years, it has been very common the report of occurrence of initial occlusal enamel lesions that are only detected by an interproximal x-ray, which compromises the dental structure. Composite resin is the most frequently used restorative material for these instances, as direct restorations meet all contemporary patient's esthetic expectations and demands. This technique enables to record the anatomic details before starting cavity preparation. This record restores the original anatomy of the tooth and eliminates the sculpture stage, in such a way that it requires less chairtime. Moreover, this technique also minimizes the dental attrition to the structures surrounding the restoration during the sculpturing time.

**Gradual sculpture and stratification of chroma in composite resin for posterior teeth: laboratorial steps**

Moreira, F.C.L.; Rodrigues, P.C.F.; Portilho, C.D.M.; Souza, J.B.; Freitas, G.C.; Netos, J.M.R.; Lopes, L.G.

Currently, composite resin selection for direct restoration of posterior teeth has become an important stage in the restorative procedures, since there is a great commercial availability presenting different optical, physical and mechanical properties. However, in addition to the choice of the material, the restorative technique is extremely important. Thus, the placement of small composite increments in a gradual manner, together with the selection of the ideal color for each layer, provides a simplified protocol to restore class I and II cavities. This allows the reestablishment of anatomy, function and color, in addition to reducing the tensions resulting from polymerization shrinkage. In this way, the aim of this work was to describe the

laboratorial steps of class I and II cavity restoration using the technique of gradual sculpture with stratification of chroma. The selected teeth for accomplishment of the steps were maxillary first molars. For class I cavities, DA3 shade was used for dentin and EA2 and T-Yellow were used for enamel, all from Opalis resin (FGM). For Class II cavities, YE shade was used to establish the mesial marginal crest, A3 for dentin's body and A2 and YE for enamel, all from Esthet X (Dentsply). Brown and yellow stains were used for pit and fissures characterization. When restoring posterior teeth directly using composite resin, the dentists must have an integral knowledge of tooth morphology combined with the use of appropriate techniques and case planning, in order to have an acceptable esthetic outcome. The technique hereby presented is a useful tool for clinicians because it provides high-quality restorations that reproduce, as close as possible, the optical and morphological properties of dental tissues.

#### **Low intensity laser therapy in temporomandibular disorder: analgesic effects and masticatory efficiency**

Venezian, G.C.; Mazzetto, R.G.; Carrasco, T.G.; Junior, W.M.; Crosio, D.M.; Mazzetto, M.O.

The purpose of this study was to evaluate the analgesic effect of low intensity laser therapy and its influence on masticatory efficiency in patients with temporomandibular dysfunctions. This study was performed according to a random, placebo-controlled, and double-blind research design. Fourteen patients were selected and allocated into two groups (active and placebo). Infrared laser (780nm, 70mw, 105J/cm<sup>2</sup>) was applied precisely and continuously onto five points of the temporomandibular joint area: lateral point (LP), superior point (SP), anterior point (AP), posterior point (PP), posterior-inferior point (PIP) of the condylar position. This was performed twice a week, for a total of 8 sessions. To ensure a double-blind study, two identical probes supplied by the manufacturer were used: one for the active laser and one for the inactive placebo laser. They were marked with different letters (A and B) by a clinician who did not perform the applications. A visual analogical scale (VAS) and a colorimetric capsule method were employed. Data were obtained at three time points: before treatment (Ev1), shortly after the eighth session (Ev2), and thirty days after the first application (Ev3). Statistical analysis revealed significant differences at 1% significance level, which implies that superiority of the active group offered considerable temporomandibular joint pain improvement. Both groups presented similar masticatory behavior, and no statistical differences were found. Regarding the evaluation session, Ev2 presented the lowest symptoms and highest masticatory efficiency throughout therapy. Therefore, low intensity laser application is effective in reducing temporomandibular dysfunction symptoms, but has no influence on masticatory efficiency.

#### **Anterior esthetic reestablishment by laminated veneer and total metal-free crown**

Souza, F.B.; Sábio, S.; Sábio, S.S.

The esthetic demands of dental patients have increased considerably, thus requiring appropriate solutions from restorative dentistry. Therefore, dentofacial composition and color of the teeth are deeply valued nowadays, which makes necessary that, in addition to having good taste and knowledge, the dentist be aware of the properties and characteristics of modern materials so that highly satisfactory results can be achieved in re-establishing dental esthetics. This work reports the case of a young female patient, unsatisfied with her smile, who sought for an esthetic restorative treatment. In order to give back to the patient the pleasure of smiling, a porcelain indirect laminated veneer was placed on 11, and a total metal-free crown was placed on tooth 21 using the IPS Empress system. The final result was highly pleasant and satisfactory, once the patient showed a great pleasure in smiling again, thus increasing her self-esteem and improving her social life.

#### **Microtensile bond strength of adhesive resin cements to enamel**

Oliveira, M.M.; Botta, A.C.; Júnior, S.D.

Resin cements are increasingly used in dental clinic due to their excellent mechanical properties, adequate bond strength and improved esthetics. The aims of this study were to assess the microtensile bond strength of three adhesive resin cements in the cementation of composite resin indirect restorations on enamel and the influence of acid etching in the bond strength. Two null hypotheses were tested: (1) Resin cements promote similar microtensile bond strength to enamel; (2) The bond strength is not affected for the acid etching. Fifteen caries-free human third molars were sectioned buccolingually and at the cemento-enamel junction. The teeth were randomly allocated in 5 groups (n=3), according to the use of acid etching before of the cementation of pre-cured composite resin blocks (Z250; 3M/ESPE) and adhesive resin cement used: G1: Rely X ARC (3M ESPE), G2: Rely X Unicem self-adhesive cement (3M ESPE), G3: Rely X Unicem + acid etching, G4: self-etching cement Multilink (Ivoclar Vivadent), G5: Multilink + acid etching. After cementation, the teeth were sectioned

and submitted to microtensile test. Fractured surfaces were classified in adhesive, mixed and cohesive failures. Data were submitted to analysis of variance and Dunnett T3 test at 5% level of significance. Bond strength means (MPa) in a decreasing order were as follows: G3 (34.4) > G1 (19.5) = G2 (13.3) > G2 = G4 (5.4) = G5 (5.6). Adhesive failures were distributed in: G1: 25.0%; G2: 51.4%; G3: 38.2%; G4: 8.7% and G5: 22.2%. In conclusion, the bond strength is measured to the type of adhesive resin cement used. The self-adhesive cement associated with previous enamel acid etching promoted the highest bond strength.

#### **The use of esthetic direct veneers in cases of color changes by posttraumatic endodontic treatment**

Sampaio, P.C.P.; Pinheiro, H.B.; Benetti, A.R.; Apayco, L.C.C.; Coneglian, E.A.C.; Ishikiriyama, S.K.; Atta, M.T.

Nowadays, the search for esthetic treatments is associated with enhancing the smile by providing shape harmony, alignment, position and color of the teeth. The improvement of composite resin provides simpler and more conservative alternatives to solve cases of color changes in anterior teeth. The esthetic direct veneers appear as a solution for cases of color changes with the advantage of a shorter clinical time and lower cost. Nonvital teeth require the use of glass fiber post systems to enhance tooth resistance. The present work reports the case of an adult female patient with color changes of teeth 11, 12 and 21 due a posttraumatic endodontic treatment. As a first option, an internal bleaching was done, but the result was not as expected. The definitive option was reinforcing dental structure with a glass fiber post system (Reforpost - Angelus) and restoration with direct veneers. Opallis (FGM) composite resin was used according to the color stratification technique. A satisfactory esthetic and functional outcome were reached on the patient's smile.

#### **Dental recontouring by esthetic direct restorations and periodontal plastic surgery: case report**

Lima, M.D.R.C.; Pinheiro, H.B.; Sampaio, P.C.P.; Atta, M.T.; Ishikiriyama, S.K.; Coneglian, E.A.C.

Agensis of the permanent maxillary lateral incisor causes discomfort to patients because it leads to smile disharmony. Its prevalence ranges from 2.5 to 35% in a 3:2 female-to-male ratio. Dental recontouring and periodontal plastic surgery can be used for correction of this situation. The success on restorative dentistry is determined not only by the high-quality and functional esthetic of the restoration, but also by the interaction with the surrounding tissues. This case report involves a young patient with agensis of teeth 12 and 22, as well as presence of tooth 62 with color alteration due to endodontic treatment. In order to develop an esthetic, harmonic smile, the integrated and conservative treatment was chosen. The first step was the accomplishment of a periodontal plastic surgery on tooth 11 for correction of the regular concave arch. After healing, laser dental bleaching was performed. Tooth 13 was recontoured and reshaped, being transformed into a lateral incisor. Esthetic direct composite resin veneers (Opallis - FGM) were made on tooth 62, to obtain the shape of a permanent maxillary lateral incisor, with similar color to that of the natural adjacent tooth. With this interdisciplinary approach, it was possible to recover the esthetic harmony of the patient's smile.

#### **Multidisciplinary aspects on the restoration of endodontically treated teeth: a case report**

Michelazzo, A.L.; Mattos, M.C.R.; Aguilera, J.F.O.; Cury, A.H.; Pereira, J.C.; Pegoraro, T.A.; Ishikiriyama, S.K.

A multidisciplinary view is essential to achieve optimal clinical result for the currently available restorative treatments in dentistry. A 23-year-old female patient came to the Restorative Dentistry Clinic at the Bauru Dental School complaining about the color of her maxillary right second premolar. In addition to the esthetic aspect, the patient mentioned that after endodontic treatment she had been instructed to follow with the definitive treatment by a coronal reconstruction. The need for a periodontal intervention was determined clinically and radiographically, in order to re-establish the biological distances and final restoration of the remaining tooth. After the periodontal surgery and the reinstate of the biological distances, the restorative treatment was conducted by luting a fiber-reinforced post (D.T. Light Post, Bisco Inc.) into the root canal with a dual-cured self-etching and self-adhesive resin cement (Biscem, Bisco Inc.), followed by the final restoration (build-up and crown) with Z350 composite resin (3M ESPE). Two conclusions are remarkable in this report: 1) A multidisciplinary view is a notable requirement to achieve optimal results in dental care; 2) The wide array of materials now available for the restoration of endodontically treated teeth can provide functionally and esthetically acceptable results, by a relative easy technique and exempt of a laboratorial step.

**Esthetic conservative procedures: enamel microabrasion**

Consolmagno, E.C.; Cunha, L.F.; Furuse, A.Y.; Mondelli, J.; Mondelli, R.F.L.

Extrinsic pigmentation and enamel hypoplasia, of hereditary or acquired origin, present diverse treatments described in the literature. Enamel microabrasion has been a viable alternative because in addition to providing a good esthetic result, it is a fast and easily performed procedure. A 22-year-old female patient sought treatment due to unpleasantness with thin opaque white lines crossing all the surface of her teeth, characterizing a severe degree of dental fluorosis. After rubber dam isolation, two 10-second applications of a paste prepared with equal portions of pumice and 37% phosphoric acid was applied intermittently with an abrasive rubber point at low speed. Between applications, the teeth were copiously rinsed for elimination of paste residues. After, microabrasion, the teeth were polished with felt disk and polishing paste followed by topical application of acidulated phosphate fluoride during 4 minutes. This conservative treatment by enamel microabrasion promoted very satisfactory clinical results, eliminating the thin opaque white fluorotic lines from tooth surface.

**Restoration of fractured anterior tooth using the stratification technique**

Cunha, L.F.; Furuse, A.Y.; Benetti, A.R.; Mondelli, J.

The restoration of anterior teeth of young patients can be challenging to dentists, especially when it is not possible to bond the tooth fragment. Composite resins have not only demonstrated good clinical behavior due to its mechanical properties, but also became available in a variety of shades that reestablish the translucence of enamel, the opalescence of dentin, and the bluish aspect of the incisal edges. In order to optimize the results, it is important to properly follow the operative procedures, starting from tooth preparation up to the final finishing and polishing procedures. Likewise, the restoration sequence is important to restore value, chroma and saturation and, consequently, reestablish the natural appearance of the teeth. Therefore, the aim of this case report is to present the restoration of a fractured anterior tooth using a nanofilled composite resin and the stratification technique to restore shape, esthetics and function.

**Esthetic and conservative treatment in anterior teeth**

Kegler, E.; Melo, J.C.P.; Gonzáles, H.; Mondelli, R.F.L.

During the past decades, in dentistry, the areas with fastest advance and development were those related to esthetics. It is the dentist's obligation to acquire a deep knowledge of the anatomy and optical behavior of the tooth structures and of the various dental materials and techniques available to produce excellent treatment outcomes. Currently, many patients are not satisfied with their teeth or smile and are looking for a treatment that might give them the perfect smile. The different types of treatment available in these days include: porcelain crowns, direct and indirect veneers, composite resin restorations, cosmetic contouring, enamel microabrasion and tooth bleaching. It is very important for the dentist to understand the differences between the techniques regarding esthetic outcomes, preservation of dental structures, and clinical longevity when elaborating a treatment plan. The objective of this work was to present a case with an esthetic and conservative resolution. The technique used was tooth bleaching with a hybrid source of LED/laser and 35% hydrogen peroxide, cosmetic contouring and restoration using direct nanohybrid composite resin, with a silicone guide. The results were satisfactory esthetics and preservation of the dental structure obtained with clinical procedures of easy execution.

**Compressive strength study of three dental cements at two different periods**

Natalício, G.L.; Silva, B.M.A.H.; Freitas, M.F.A.; Freitas, C.A.; Mondelli, J.

The compressive strength represents one of the most important mechanical properties in relation to the masticatory forces and the dental materials. This work had as objective to evaluate the compressive strength of three dental cements (a zinc phosphate, a glass-ionomer and a resin cement), at the periods of 1 h and 24 s. For this test, 10 specimens of each material were fabricated using a split cylindrical polytetrafluoroethylene matrix (4 mm in diameter and 6 mm in height), with two internal orifices that allowed obtaining two simultaneous specimens. Specimen dimensions were in compliance with the recommendations of the American Dental Association (ADA # 96 specification) and the International Organization of Standardization (ISO 9917:1(E) standard). The results were analyzed statistically by two-way ANOVA and Tukey's multi-comparison test with  $p < 0.05$ . The resin cement presented the highest compressive strength means in comparison to other the cements, at both periods of time. On the other hand, the glass-ionomer cement presented the lowest compressive strength means amongst all materials, and at the different periods.

**Evaluation of three dental cements in relation to shear punch strength**

Gonçalves, E.S.; Silva, B.M.A.H.; Freitas, M.F.A.; Freitas, C.A.; Mondelli, J.

The dental cements must present satisfactory mechanical properties in order to support masticatory forces and occlusal loads in the oral cavity. The shear punch strength is a simple and efficient method to evaluate the strength of a material, by means of an axial load applied to dislocate a same material, or materials between itself. The objective of this work was to evaluate the shear punch strength of three dental cements (zinc phosphate, glass ionomer and resin cements). For this test, specimens were prepared using a ring-shaped matrix with dimensions of 14 mm of internal diameter and 1.5 mm of height and were attached to proper device for the test. Ten specimens of each material, for the respective test, were analyzed in the periods of 1 and 24 hours. The results were analyzed by two-way ANOVA and Tukey's multi-comparison test ( $p < 0.05$ ). The resin cement presented the highest shear punch strength means, whereas the glass ionomer presented the lowest means among all tested materials, together with the evaluation periods.

**Analysis of Vickers hardness in Nobel implants simulating the fluoride action in oral environment**

Pereira, A.; Filho, R.B.F.; Pessoa, R.S.; Ribeiro, A.L.R.; Vaz, L.G.

Currently, titanium dental implants have been widely used to replace lost teeth and the fluoride present in toothpastes may alter the surface of these implants. The aim of the present study was to evaluate the Vickers hardness (VH) of commercially pure titanium implants with treated surface of Nobel Biocare® trademark, after simulating the action of fluoride in the oral environment for 5 and 10 years. Twenty one implants were randomly assigned to three groups: G0 (control,  $n=7$ ), G5 (5 years,  $n=7$ ), G10 (10 years,  $n=7$ ). Three VH readings *per* specimen were made on the implant apices (Buehler microdurometer model 1600-6300). For simulation of fluoride action, the specimens were immersed in fluoride solution (1500 ppm, pH 5.3) for 184 hours (G5) and 368 hours (G10), the control group being immersed in distilled water. There was no statistically significant difference regarding the implant hardness after fluoride action for any of the groups (G0  $p=0.46$ ; G5  $p=0.73$ ; G10  $p=0.73$ ; Wilcoxon matched pairs test). However, there was significant difference among the groups ( $p < 0.001$ ; Kruskal-Wallis test). Multiple comparisons showed that G10 was different from G0 before and after fluoride action ( $p < 0.001$ ). Within the limits of this study, it may be concluded that fluoride was not able to alter the Vickers hardness of dental implants in either of the experimental periods.

**Anterior restorations without bevel - the reason to use them**

Cesnik, R.M.; Kabbach, W.; Andrade, M.F.; Cesnik, R.M.; Clavijo, V.G.R.

Fracture of the anterior teeth during childhood is common and sometimes the presence of the fractured fragment indicates tooth reattachment. However, the fragment is not always available or has already lost its optical properties. In this context, restoration of fractured teeth by the direct technique is challenging, even more when the dentist wants to preserve the maximum dental structure. This case report presents a clinical protocol for direct composite resin restoration of teeth 11 and 21, which had a middle third fracture in a young patient in whom it was preferred not to prepare a buccal bevel.

**Extensive restorations in posterior teeth: problems and solutions**

Oliveira, G.U.; Valdivia, J.R.M.; Gonçalves, E.S.; Mondelli, J.

In the clinical practice, the placement of direct posterior restorations could be difficult due to the large number of obstacles that are posed during the restorative procedure. In addition to a good diagnostic and an accurate treatment plane, it is important to know and to be skilled in different procedures, as well as make a correct choice and use of adjusted materials and accessories to obtain a successful restoration. The most common problems are the changes in the biological distances, lack of retention of the restoration, lack of enamel on the gingival cavity wall, difficulty in matrix adaptation, recovery of dental anatomy and contact point. This case report presents solutions for the restoration of posterior teeth with extensive loss of structure, using composite resin.

**Adhesive cementation using a chemically actived system**

Cioffi, M.S.; Kabbach, W.; Andrade, M.F.; Clavijo, V.G.R.

The adhesive cementation of fixed metal-free restorations using pure ceramic is an important step for the success of the restorative treatment, especially because it makes feasible a more homogenous distribution of forces exerted by the tooth-restoration

complex. Therefore, the success of this procedure is directly related to the knowledge of adhesive and luting systems used, as well as their possible incompatibilities. The guidelines for use of the actual self-curing resin-based cements, which associate the benefits of adhesive self conditioning hybridization with the chemical polymerization of resin cements, will be reported.

#### **Composite resin in posterior teeth - feasibility of the direct technique for replacement of old amalgam restorations**

Alves, S.V.; Andrade, M.F.; Kabbach, W.; Clavijo, V.G.R.

Nowadays, dark-colored restorations in posterior teeth are less tolerated by patients, who prefer the replacement of amalgam restorations. The popularity of composite resins is notorious, especially in posterior restorations. Nevertheless, its indication to restore teeth that possess old amalgam fillings should be carefully evaluated. The purpose of the present work was to discuss the indications of posterior composite resin restorations for replacement of old amalgam fillings by a case report. The unsatisfactory amalgam restorations on teeth 44, 45 and 46 were replaced by composite resin restorations using adhesive direct techniques because there was material indication.

#### **Extensive functional and esthetic rehabilitation: reducing costs and optimizing results**

Francisconi, L.F.; Prado, J.M.; Vasques, M.A.B.; Francisconi, M.F.; Pereira, J.C.; Francisconi, P.A.S.

Nowadays, even though emphasis has been given to prevention in Dentistry, missing posterior teeth is still observed relatively often, which can cause overfunction of anterior teeth, thus providing consequent wear of them. This is a cumulative process that demands, over time, extensive functional and esthetic rehabilitation, many times with an interdisciplinary approach. Therefore, this case report intends to elucidate possible alternatives for treating these alterations, which would make possible to reduce costs and treatment time, optimizing the outcomes. The treatment protocol started with the anamnesis and review of clinical history, considering unsatisfactory esthetic aspects and loss of occlusal vertical dimension (OVD) as the main patient's complaint. Clinical exam revealed absence of teeth 16, 17, 24, 25, 26, 27, 34, 36, 37, 45, 46 and 47, as well as the presence of pronounced incisal/occlusal tooth wear in all remaining present teeth. Unsatisfactory removable partial dentures (RPDs) were substituting lost structures. As longer and expensive treatments (fixed partial dentures, cantilevers or dental implants, for example) did not meet the patient's emotional and financial expectations, the treatment of choice was OVD rehabilitation by new RPDs and reconstruction of worn dental structure with direct composite resin. Immediate evaluation showed patient satisfaction and constant follow up has proved the treatment effectiveness until the present moment. It is important to emphasize that preservation is imperative to the success of cases like this. It may thus be concluded, that simple treatments can become an acceptable option for cases of extensive functional and esthetic rehabilitation, reducing costs and optimizing results.

#### **EMax system - A new option in restoration**

Moffa, E.B.; Kabbach, W.; Calixto, L.R.; Andrade, M.F.; Clavijo, V.G.R.

Development of new metal-free ceramic systems for indirect restoration, with physical properties similar to that of metal alloys, permits the fabrication of restorations with better mechanical properties and excellent esthetic characteristics. Moreover, free-metal ceramic restorations meet great popularity due to the increased demand of patients for a harmonic smile. In this work, we report a case of smile rehabilitation by using IPS e.Max System, a new highly promising ceramic system. The possibility of recovery of shape and dental function combined with esthetic characteristics, such as color, translucence and opacity, biomimicking the dental structure, have broadened the indication of this system. Clinical protocol as well discussion of the use possibilities of IPS e.Max system in smile rehabilitation are discussed in this study.

#### **Association of bruxism and alimentary disturbances: case report.**

Machado, N.A.G.; Branco, C.A.; Fonseca, R.B.; Barbosa, G.A.S.; Soares, C.J.; Neto, A.J.F.

Bruxism is a pathological activity of the stomatognathic system that includes grinding and clenching teeth during parafunctional movements of the jaws. Clinically, it relates with wear of the dental structure and muscular and articular discomforts, presenting a great number of local etiological, systemic, psychological and hereditary factors, requiring a multidisciplinary treatment. Its consequences range from small damages, evolving gradually to dental (abfraction, wear and tear, trines), periodontal

(recessions, mobility) and more severe muscle-articular alterations. When associated with alimentary habits or digestive disturbances, it may become more destructive to the dental hard tissues. This work presents a bruxism case associated with an acidic diet and episodes of gastric reflow, generating severe wear and cracking of the dental structures. From the diagnosis, a multidisciplinary treatment plan was established, following the current concepts of bruxism. The initial treatment consisted of the correction of the alimentary habits and gastric disturbances, followed by the installation of an interocclusal device in centric relation of occlusion (CRO) for reestablishment of the occlusal stability, vertical dimension of occlusion, anterior guidance and return of the normal muscle activity (90 days of use). After improvement of the initial symptoms was confirmed, the rehabilitating treatment was implemented in CRO by means of accurate procedures using composite resin, recovering the esthetic, functional and occlusal stability, followed by the installation of a new interocclusal device, with the function of maintaining the reached condition.

#### **Association of orthodontics, operative dentistry and occlusal adjustment for functional and esthetic dental treatments**

Oliveira, R.G.; Carlo, H.L.; Branco, C.A.; Neto, A.J.F.; Carlos, J.S.; Rodrigo, B.F.

The increasing demand for esthetic dental treatments has led to the use of invasive techniques that remove great amounts of tooth structure. Although indirect restorative procedures enable optimal esthetic results, there is a great removal of sound tooth structure. Therefore, the aim of this study was to present a case report where the use of orthodontic dental movements, closing of diastemas with composite resin and occlusal adjustment enabled the accomplishment of a non-invasive treatment approach with high esthetic results. At the end of the orthodontic movement, specific composite resin shades for each dental region were used in association with a proportional distribution of restorative materials among the teeth, resulting in an optimal esthetic result. The occlusal adjustment allows a correct distribution of occlusal contacts which contributes for the maintenance of orthodontic treatment and preservation of composite resin restorations. It may be concluded that the association of non-invasive dental procedures can generate satisfactory results, avoiding the removal of sound tooth structure.

#### **Evaluation of low intensity laser therapy in the treatment of myofascial pain syndrome**

Carrasco, T.G.; Carrasco, L.C.; Mazzetto, M.O.

The aim of this study was to evaluate the effectiveness of the low intensity laser therapy (LILT) in the treatment of myofascial pain syndrome (MPS) in a double-blind study and the establishment of accurate parameters of application. Sixty patients with MPS in the masseter and temporalis muscles had been enclosed in this study. Thirty of them (test groups) were treated with LILT (GaAlAs, 780nm; 50mW, 60mW, 70mW; 20, 40, 60 s) varying the doses of application (25J/cm<sup>2</sup>, 60 J/cm<sup>2</sup>, 105J/cm<sup>2</sup>), comprising 8 sessions two times a week. The other thirty underwent the same protocol but received placebo laser treatment (controls). The evaluation parameter was the visual analog scale (VAS) and the evaluations were assessed just before the treatment (Ev1), immediately after the fourth application (Ev2), immediately after the eighth application (Ev3), after fifteen days of the last application (Ev4), after 30 days of the last application (Ev5). The results showed statistically significant reduction of pain in the laser groups compared to the placebo groups (ANOVA p<0.05), demonstrating the superiority of the laser therapy in relieving chronic pain in the MPS trigger points for the studied muscles. There was no statistically significant difference between the averages obtained immediately after the therapy and after 1 month (p>0.05). Better results were found with 25J/cm<sup>2</sup> for the temporal muscle and 60J/cm<sup>2</sup> for the masseter muscle. LILT was proven to be an appropriate therapy for MPS and should be considered as an alternative to other treatments.

#### **CEREC 3 - The new generation of computed ceramic systems**

Padovani, G.C.; Queiroz, R.S.; Calixto, L.R.; Boaventura, J.C.; Porto-Neto, S.T.; Candido, M.S.M.

The dental ceramics are in constant evolution and have presented significant improvements in its mechanical and esthetic characteristics. The Cerec is a sophisticated system that uses CAD/CAM (Computer Assisted Design/Computer Assisted Machine) technology to prepare ceramic blocks. After tooth preparation, CAD reading is made with a scanner, either in the patient's mouth or on a model poured on special gypsum for the system. The image of the future prosthesis is processed using specific software (CEREC 3D-CAD) and the ceramic block (CAM) is prepared. The objective of this work was to detail the clinical-laboratorial preparation of an overlay indirect restoration fabricated with Procad ceramics using CEREC 3 system. A patient sought treatment due to the fracture of tooth 26. During anamnesis, the patient reported that the fracture had occurred 2 months before. The tooth presented sensitivity to mastication and to cold stimulus. In intraoral clinical

examination revealed normal periodontal tissue and absence of tooth losses. Tooth 26 was fractured with presence of carious tissue. The radiographic examination did not show any periapical and/or periodontal alteration. Due to the position of the tooth and its great structure loss, it was planned, as a manner of reinforcing the dental remainder, the fabrication of an indirect all-ceramic restoration using CEREC 3D system, which was performed after protecting the dentin-pulp complex with glass ionomer cement (Vitrebond). It was observed that the prosthesis presented a good marginal adaptation, though limited esthetic outcome because, during the laboratorial fabrication protocol, it was developed from a monochromatic ceramic block.

#### **The indication of cosmetic tooth remodeling for cases of minor severity of anterior open bite**

Nomoto, D.M.; Furuse, A.Y.; Mondelli, J.

Tooth remodeling can be used as an alternative treatment for cases of minor severity of anterior open bite. The orthognathic surgery and/or the orthodontic treatment would be the ideal treatment for the correction of this skeletal problem. However, the bite closure by occlusal adjustment and cosmetic contouring is less traumatic, less expensive and a faster treatment. By this technique it is possible to rehabilitate the function and to improve the dentofacial harmony. Moreover, the facial-third proportion and labial-seal with the perioral muscles in normal function can also be achieved. This work has the purpose of demonstrating a case of anterior open bite closure by selective occlusal adjustment. This technique promoted better occlusal function and improved the protrusive movement and partially the lateral movement of the patient. Additionally a better esthetic was achieved.

#### **Smile esthetic rehabilitation: closure of multiple diastemas and cosmetic contouring**

Aguilera, J.F.O.; Medina-Valdivia, J.R.; Furuse, A.Y.; Francischone, C.E.; Mondelli, J.; Mondelli, R.F.L.

Nowadays, esthetics plays an important role in daily life. Alterations, such as agenesis, may cause multiple diastemas and compromise the smile harmony. In these situations orthodontic treatment alone cannot solve the esthetic and functional problem. To improve the final result the golden proportion can be used as a guide in the smile rehabilitation. The good adhesion properties of composite resins offer to both professional and patient a conservative and esthetic outcome with good longevity. The purpose of this work was to present a case report of a 17-year old female patient who was referred to the Department of Operative Dentistry (Bauru School of Dentistry) to close multiple anterior diastemas after a 4-year orthodontic treatment. The diastemas were caused by multiple agenesis of maxillary right lateral incisor and four first premolars. Furthermore, the maxillary left lateral incisor was peg-shaped. The esthetic treatment of the anterior maxillary right area consisted of canine and second premolar cosmetic contouring. After tooth contouring, composite resin restorations were placed to close the diastemas. A golden proportion grid was used to guide the restorations. The treatment was conducted after tooth bleaching and occlusal adjustment.

#### **Restoration of posterior pulpless teeth - adhesive endodontic crown**

Kabbach, W.; Clavijo, V.; Andrade, M.F.

Tooth bleaching in widely destroyed crowns constitutes a challenge to the dentist, and it requires the development of techniques and materials capable of providing and/or keeping the resistance of tooth structure and the retention of the restorative material to the cavity. A technique proposal is the system of Adhesive Endodontic Crown, also called Endocrown, which consists of a ceramic restoration that comprehends the full dental and an apically integrated retention into the pulp chamber, without the placement of a post. This case presents a therapeutic option to restore devitalized posterior teeth with extensively destroyed coronal remainder using the Endocrown system. The techniques of preparation, impression and surface strengthening are described by the presentation of this case to illustrate the possible use of this system

#### **Use of ozone in carious lesion treatment**

Rodrigues, P.C.F.; Lopes, L.G.; Freitas, G.C.; Moreira, F.C.L.; Portilho, C.D.M.; Campos, B.B.; Souza, J.B.

The use of ozone in dentistry is presented as a new alternative in the treatment of carious lesions, as its clinical effectiveness has been proven by many studies related to the inhibition of virus, bacteria and fungi. Ozone (O<sub>3</sub>), an allotropic variety of oxygen, is constituted by triatomic molecules of this element. It needs to be prepared at the moment of use due its instability, or rather, it comes back to be oxygen in short

time space when used in parenteral ways or directly in gaseous form. Mixed with water or oil, it can be used topically and by prolonged time. Because of its acknowledged property of inhibiting and/or destructing many oral cavity bacteria, such as *Streptococcus mutans*, *Streptococcus sanguis* and *Actinomyces odontolyticus*, its use in the treatment of carious lesions is based on its antimicrobial activity. The reduction of the biofilm acidity makes possible the diffusion of calcium and phosphate ions to the carious lesions and allows remineralization of the affected dentin and enamel. Currently, ozonotherapy is considered a promising therapy by its low investment and maintenance cost, ease of application and satisfactory clinical results. In view of the aforementioned issues, the aim of this study was to present the ozone uses in the treatment of carious lesions, demonstrating its action mechanism, indication, limitations, advantages, disadvantages and perspectives. This review of literature was carried out by electronic searches using the PubMed, SciELO and Bireme databases. Full-text articles were retrieved from CAPES online journals database.

#### **Previous broken tooth restoration using glass fiber posts settled in dentin**

Paganelli, G.G.; Furuse, A.Y.; Benetti, A.R.; Cunha, L.F.; Mondelli, J.

In Dentistry, glass fiber posts become used in diverse situations, such as splinting of teeth and reinforcement of metal-free fixed partial dentures, also serving as an alternative to the use of intracanal metallic cast retainers. In general, these glass fiber posts were introduced to the market as an alternative for reinforcement and improvement of the mechanical properties of structures based on resins. The good results obtained with glass fiber intracanal posts raised the possibility of using these retainers in dentin. This case report presents the prototype of a new glass fiber post to be fixed in dentin. The objective of this new type of post is to anchor extensive direct composite resin restorations, without compromising the esthetic or causing stress in the dentin. The idealization and elaboration of these posts were based on the same principles used in the development of metallic posts inserted in dentin. The posts are pre-counteracted in a way that 2 mm is cemented into the dentin and 2 mm is enclosed in the mass of the restoration. The orifices in dentin are prepared with spiral drills used for screwing the metallic posts into the dentin. The glass fiber posts can be fixed into the orifices by means of adhesive techniques. This post system is an alternative to the conventional metallic pins and its viability has been already been evaluated by clinical and laboratorial studies.

#### **The importance of restorative test when using anterior composite resins**

Castro, F.C.; Kabbach, W.; Calixto, L.R.; Clavijo, V.G.R.; Andrade, M.F.

Inadequate anterior restorations compromise the appearance. Any alteration in color and form, even if minor, is not well accepted by patients, who have esthetic demands and seek for replacement of these restorations. In this aspect, it is challenging to reach esthetic success, especially when opting for conservative treatments that try to preserve maximum dental structure. For this reason, special care must be given to the restorative tests to obtain satisfactory results with maximum predictability. This case report deals with the restorative tests used in the replacement of old filling by composite resin restorations on teeth 11 and 21.

#### **Evaluation of the published terms in articles of four dental journals with reference to the Describers in Healthy Sciences (DeCS)**

Portilho, C.D.M.; Moreira, F.C.L.; Rodrigues, P.C.F.; Lopes, L.G.; Souza, J.B.; Martorell, L.B.; Freitas, G.C.

The search and retrieval of references in dental literature indexed in SciELO (Scientific Electronic Library Online) database are standardized by the Describers in Healthy Sciences (DeCS). The DeCS has been developed with the aim of allowing the common terminology use for research in three languages providing a consistent and unique way for recovery of information. If describers are be inadequately used, the article will not be retrieved and consequently will not be cited in others studies. In this context, this research evaluated if the terms used in articles published in four dental journals indexed in database SciELO - Dental Press of Orthodontic and Orthopedic (A), Brazilian Dental Journal (B), Journal of Applied Oral Science (c) and Brazilian Oral Research (D) - between 2005 and 2006, were in accordance with the DeCS describers. The results showed that regarding the year 2005 and the number of articles published in the journals in this year, the percentages of terms cited in Portuguese in accordance with the DeCS were respectively 36.7%, 55.5% and 91% for A, C and D journals. And the English terms agreed in 28%, 57.8% and 88% for B, C and D journals, respectively. In 2006, a positive correlation between the percent increase in article publication and the published terms was observed in all journals. It may be concluded that authors, publishers and copyholders must be more rigorous on the analysis and choice of the describers cited in articles.

### Influence of feldspathic ceramic shade and cement photoactivation period on microhardness of dual resin cement.

Máximo, R.O.; Santana, F.R.; Silva, N.; Carlo, H.L.; Fonseca, R.B.; Soares, C.J.

The feldspathic ceramic shade and photoactivation period of the cement, when associated, can alter the hardness of the resin cement. The aim of this study was to evaluate the influence of the photoactivation period and feldspathic ceramic shade on the microhardness of dual resin cement. One hundred bovine incisors were selected for this study. Their roots were cut off and their crowns were embedded in polystyrene resin. Next, they were randomly divided into 20 groups (n = 5). Standardized cavities (4.0 mm in diameter and 1.0 mm in depth) were prepared on the buccal surfaces. Ceramic restorations (Noritake Ex 3) (4mm in diameter and 4mm thickness) were fabricated in shades A1, A2, A3, A3.5 and A4. A dual resin cement (Rely X-ARC) was inserted into each prepared cavity and a mylar strip was positioned over it. The ceramic pastille was coupled to a perforated metal device and positioned between the cement and the light source, and was light cured for 40, 80, 120 and 160s. Vickers hardness test was performed on the cement layer, with a 50g load application for 30s, making 5 indentations *per* specimen. Two-way ANOVA (4x5) and Tukey's test ( $\alpha=0.05$ ) showed difference for the factors photoactivation period and shade. The results (in MPa) were: A1t40 (18.1±1.4)a; A1t80 (20.8±1.9)a; A1t120 (21.0±1.1)a; A1t160 (22.4±2.3)a; A2t40 (13.8±1.3)b; A2t80 (19.4±1.0)a; A2t120 (20.1±1.4)a; A2t160 (21.4±1.7)a; A3t40 (11.9±2.2)b; A3t80 (18.3±0.8)a; A3t120 (19.4±1.7)a; A3t160 (20.3±4.0)a; A3.5t40 (9.1±2.2)c; A3.5t80 (18.9±1.9)a; A3.5t120 (18.7±2.1)a; A3.5t160 (19.8±3.0)a; A4t40 (6.5±1.3)d; A4t80 (15.7±2.4)b; A4t120 (17.4±1.1)ab; A4t160 (19.7±2.8)a. The increase in feldspathic ceramic shade saturation decreased the hardness when polymerized for 40s. The increase in polymerization time to 120 and 160s decreased the influence of ceramic shade saturation on cement hardness.

## Oral Diagnosis

### Study about oral health of elderly people resident in the "São Francisco de Assis Home"

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The increase of the Brazilian elderly population has placed in evidence physiological processes of this age range, adding resources to minimize or to delay undesirable alterations. The aim of this study was to evaluate the oral conditions of 76 aged residents of the "São Francisco de Assis Home" of the city of Araraquara. The patients were examined at the asylum facility and data from clinical interview and oral examination were collected. Most patients were female (61.8%) and the mean age was 76 years. Regarding systemic alterations, 92.4% of the aged presented some kind of health problem, being mostly cardiovascular alterations (43.3%) and psychiatric/neurological disorders (28.9%). With respect to medications, the most used were antihypertensive and psychiatric drugs (28.1% and 24.0%, respectively). Regarding oral hygiene, 34.7% reported to clean the mouth three times a day, but most patients presented bad oral hygiene and removable dentures in poor cleaning conditions. Also, injuries and/or alterations in the oral mucosa were evaluated, the most prevalent being: actinic cheilitis (13.4%), non-papillated tongue (10.4%), furred tongue (10.4%) and candidiasis (6.6%). This study evaluated the oral conditions of elderly individuals aiming at instituting a guidance program directed to this population in order to improve life quality of this age group.

### Clinical evaluation of the treatment of denture-related stomatitis by *Candida albicans* using therapeutic protocols with systemic and topical antifungal agents associated or not with hygiene orientation

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Denture stomatitis can be manifested on the oral mucosa as lesions that are associated with the use of complete dentures. This study evaluated, comparatively, the effectiveness of four therapeutic protocols for denture-related stomatitis in complete denture wearers treated at the Dental Course of UFES. The patients were submitted to clinical exam to verify the presence of denture-related stomatitis and mycological exam of the palatal mucosa for isolation and identification of *Candida* spp. The patients were randomly assigned to four groups, according to the therapeutic protocol: Group I - administration of a systemic antifungal agent (fluconazole); Group II - administration of a topical antifungal agent (nistatin); Group III - administration of a systemic antifungal (fluconazole) associated with oral hygiene protocol; and Group IV - instructions of complete denture cleansing. In conclusion, the most efficient treatment approach to the denture-related stomatitis was the association of systemic antifungal therapy (fluconazole) with instruction on oral hygiene.

### Temporomandibular dysfunction and ear symptomatology: a clinical report.

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The fact that different pathologies may have the same signs and symptoms reinforces the importance of making a correct diagnosis and treatment plan. It also shows that the differential diagnosis is a very important parameter to distinguish TMD and otological problems. In the case reported hereby, audiological exams and occlusal splint treatment were undertaken. After occlusal splint treatment, the only remaining complaint was essentially tinnitus, which was associated with frequent and enduring exposure to intense noise in the workplace. Therefore, identification of each pathology, occurring simultaneous or not, guides patient referral to the appropriate healthcare professional and, consequently, adequate treatment.

### Transmigration of mandibular premolar: a case report

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Transmigration is the name given to an ectopia in which teeth are found in areas distant from the alveolar processes. The initial angulation of the mandibular second premolar germ and the early loss of the permanent first molars can influence the distal migration of the mandibular second premolar. Some studies have reported that ectopic teeth can be found in a variety of places of the oral cavity and also in other areas of the human body. There are reports of teeth in the maxillary sinus, mandibular condyle, coronoid process, mandibular angle, orbit, palate, mentum and also the skin. Previous studies showed that in children with cleft lip and palate, the occurrence of dental anomalies is higher than in normal children. The objective of this study is to report a case of migration of tooth 35 in a patient under treatment at the Hospital for Rehabilitation in Craniofacial Anomalies (HRAC-USP), and also to investigate whether the migration process is similar to that occurring in individuals without cleft lip and palate. The migration of tooth 35 was confirmed by 8 panoramic radiographs and one periapical radiograph that were taken during the patient's treatment between 1978 and 2002, and available at the fling service of the Department of Dental Radiology of HRCA (HRAC-USP). It may be concluded that the distal migration of the left mandibular second premolar (tooth 35) when associated with the presence of cleft lip and palate is a quite rare condition because, as far as it could be ascertained, there are no similar cases previously reported in the literature, but it occurred in a similar way in individuals without cleft lip and palate.

### An atypical lesion caused by onychophagia

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Onychophagia is defined as the habit of biting the nails. It is a nervous, repetitive, embarrassing, socially undesirable habit that can be found in 6-60% of the world population. The aim of this study is to describe an atypical lesion associated with onychophagia and to present a brief literature review on this habit. An adult male patient undergoing routine dental care reported the development of an unguinal lesion on the left thumb. The nail presented an uneven surface, with reduced thickness, a depression over the lunula and a visible petechia underneath the lesion. As the patient reported exacerbation of his parafunctional habits, it was clear the existence of an association between these habits and the lesion. A counseling approach was planned in order to instruct the patient to avoid biting the nails and removing the surrounding epithelium. After two months, the lesion had disappeared secondary to nail growth. It could be observed how important the dentist could be on detection of onychophagia and referral to the patients to the most appropriate treatment.

### Cone bean technology

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Conventional x-ray imaging is essential to settle a diagnosis of maxillary diseases. The limitations in the interpretation of the images are mainly due to the formation of a two-dimensional image of three-dimensional structures. Recently introduced to the market, the Cone Bean technology allows 3D facial image acquisition and reconstruction. This technological advance contributes significantly to the study of patients who need facial reconstructions or dental implants, and to the more accurate identification of the diseases that affect the bone and dental structures. The attainment of 3D images still allows the construction of archetypes that not only assist in the surgical planning, but also reduces the surgical time considerably. Image production, indications, advantages and cost of this new technology are addressed in this work.