Evaluation of cranial bone repair in experimental model treated with bisphosphonates. Histological and hystometric study in rabbits

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Introduction: Bisphosphonates inhibit osteoclast activity and are indicated for the treatment of osteoporosis and osteolytic tumors, but its effect in the jaws are still doubtful. Objective: To evaluate the repair and cranial bone remodeling after systemic application of alendronate (ALN) through histological and histometric analysis. Material and methods: 28 rabbits were randomly divided into two groups, control (C) and bisphosphonate (B). The groups were divided into two subgroups for euthanasia at 15 and 60 days postoperatively. Group B received 3 systemic ALN applications at a dose of 0.2 mg / kg for 4 weeks. Group C received saline applications in the same way and at the same time. The animals underwent surgery to create two non-critical defects of 5mm in diameter on the skull. After euthanasia, histological and histometric analyses were performed. Data were subjected to statistical analysis (ANOVA p≤ 0.05). Results: Histologically, group C at 15 and 60 days showed connective tissue, trabecular bone and compact bone with osteoblastic cells. In Group B, at 15 days, we observed the presence of connective tissue, osteoblastic cells, and intense compact bone neoformation. At 60 days, the defect showed a large amount of newly formed bone with a compact dense connective tissue surface and the presence of fat cells. The histometric analysis showed statistically significant differences between groups for bone areas measures and connective tissue. Conclusion: Systemic application of ALN at a dose of 0.2 mg / kg favored the repair and the cranial bone remodeling.

Keywords: bisphosphonates; rabbits; bone healing.
Osteocalcin immunoprofile assessment on bone repair in critical size defects treated with white subcutaneous adipose tissue in rat and rabbit animal model

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Keywords:
subcutaneous fat;
bone regeneration;
osteocalcin.

Introduction: Adipose tissue can influence the tissue metabolism and has potential to differentiate into skeletal, cartilage and endothelial tissue. Objective: To evaluate the osteocalcin immune expression in bone repair of critical defects treated with white adipose tissue in rats and rabbits. Material and methods: 14 rats and 14 rabbits were used. A critical defect was performed in the skull of each animal. The animals were divided into 4 groups: RC (rat control), RaC (rabbit control), RAT (rat adipose tissue), RaAT (rabbit adipose tissue). In groups RC and RaC, the gap was filled with blood clot. In groups RAT and RaAT, the defect was filled with macerated white subcutaneous adipose tissue graft. Euthanasia of groups RC and RAT was at 30 days and groups RaC and RaAT at 40 days. Histological and immunohistochemical analyses of osteocalcin were performed. The data were submitted to descriptive statistics (mode). Results: In both experimental models, osteocalcin immunostaining was observed. However, group RaAT had higher immunoreactivity between adipocytes than did group RAT. In groups RC and RaAT, the surgical wound was filled with collagen fibers. In group RaAT the defect was filled with collagen fibers present between the adipocytes fibers. Furthermore, chronic inflammation was observed and new bone formation signals. Conclusion: Both graft models showed low osteogenic capacity. However, rabbit animal model had more evident immunoreactivity and a larger amount of bone matrix and adipocytes.
Evaluation of hard palate tomographic regions for skeletal anchorage devices installation

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Introduction and Objective: To quantitatively evaluate the hard palate areas available for installation of skeletal anchorage devices. Material and methods: The sample consisted of 69 cone beam computed tomography of individuals from private radiology clinic (mean age 17.23 ± 7.14 years). Osoftware Dolphin Imaging® was employed to assess bone palate availability in coronal reconstructions of 3, 18, and 30 mm from posterior wall of the incisive foramen. In each reconstruction, the thickness was 1.5 mm and 9 mm from the palatal suture bilaterally. Bone availability in the different regions of the palate was evaluated through analysis of variance (ANOVA) for repeated measures followed by Bonferroni test. In addition, the age and gender influence was studied using t test. Results: Bone availability increased in the direction along the anterior-posterior sutures. In the reconstructions of 5 and 9 mm, this availability tends to decrease with respect to sutures, except for 9 mm reconstruction, in which tends to increase in the region of 3 mm. There were no statistically significant differences in bone availability regarding to age. Greater bone availability was found for males in the anterior region in the areas of 1 and 5 mm. Conclusion: Based on the results obtained, the areas of best available bone for installation of skeletal anchorage devices are within 1 mm of the sutures in the anterior-posterior direction and 3 mm from the incisive foramen along the medial-lateral direction.

Keywords:
orthodontics; implants; cone beam CT; hard palate.
Histological and histomorphometric evaluation of low laser therapy (LLT) and platelet rich plasma (PRP) in the process of bone repair. Experimental study in rats

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\textbf{Keywords:} low laser therapy; platelet rich plasma; healing.

\textbf{Introduction:} The process of bone repair occurs after injuries to the body. The low laser therapy (LLT) increases metabolism, cell proliferation and maturation, and decreases the inflammatory mediators. PRP releases proteins and growth factors associated with the repair. \textbf{Objective:} To evaluate the bone repair process after the PRP and LLT. \textbf{Material and methods:} A 45 mm surgical defect was performed in the skull of 66 Wistar rats. The bone was particulate and used as autogenous bone graft (ABG). The animals were divided into four groups (G1: PRP, LLT and ABG; G2: PRP and ABG; G3: LLT and ABG; G4: only ABG). Euthanasia was performed at 30 and 60 days. The specimens were subjected to histological and histomorphometric assessments and the hard tissues were evaluated regarding to the degree of bone formation, inflammatory infiltrate and amount of connective tissue. \textbf{Results:} G1: Significant areas of mature bone graft, mild inflammatory infiltrate and marked osteoblasts. G2: Discrete presence of immature bone and mature bone, connective tissue in significant amounts and scattered foci of inflammatory infiltrate. G3: Extensive areas of mature bone with mild immature bone area. Sparse inflammatory infiltrate foci at 30 days, and their absence to 60 days. G4: Large areas with presence of immature bone and mature bone, with mild inflammatory infiltrate. \textbf{Conclusion:} LLT minimized the inflammatory process resulting in its absence after less time. The PRP and graft association favors the presence of mature bone (graft).
Comparative study between the digital and conventional radiography in the process of bone repair with low-level laser therapy (LLLT) and platelet-rich plasma (PRP)

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Keywords: low laser therapy; platelet rich plasma; healing.

Introduction: The process of bone repair occurs after injuries to the body. The low laser therapy (LLT) increases metabolism, cell proliferation and maturation, and decreases the inflammatory mediators. The PRP releases proteins and growth factors associated with the repair. Objective: To evaluate through digital and conventional radiography bone repair after PRP and LLLT. Material and methods: a 45 mm surgical defect was performed in the skull of 66 Wistar rats. The bone was particulate and used as autograft (AG). The animals were divided into four groups (G1: PRP, LLLT and AG; G2: PRP and AG; G3: LLLT and AG; G4: only AG). Euthanasia was carried out at 30 and 60 days. Conventional (70kVp, 7mA Dhabi Atlante®) and digital (Kodak RVG 5100) x-rays of the calvaria were taken. Three calibrated examiners performed an evaluation of both images on the bone formation, giving score 1-5, 1 meaning no bone formation and 5 meaning between 75% and 100% of the defect filled with bone. Results: The weighted Kappa test (0.5634 to 0.7813, 95%) showed agreement among the examiners in the evaluation of digital and conventional radiographic images. There was substantial agreement on digital radiographic analysis while in the conventional radiographic analysis, the agreement was moderate. G3 showed the highest score of bone formation by digital and conventional evaluations followed by G2 / G1 and G4. The Mann Whitney test showed statistically significant difference in bone formation only in G1 (p = 0.049) when comparing the digital and conventional images. Conclusion: The process of bone repair is best assessed by digital radiography. FINANCIAL SUPPORT: Positivo University.
Aesthetic perspective from the dental papilla evaluation in the upper anterior region

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**Keywords:** gingival papilla; gingival aesthetics; aesthetic perception.

**Introduction and Objective:** This study aimed to compare the aesthetic perception of lay people and dentists about the appearance of the papillae in the upper anterior region in its height and extension changes. **Material and methods:** Eighty-five lay people (35 with prostheses and 50 without prostheses) and 55 dentists (31 implantodontists or periodontists and 24 from other specialties) evaluated the images, classifying them as very satisfactory, satisfactory, unsatisfactory, very unsatisfactory. Seven images were evaluated: 1) control image of a harmonic dental-gingival smile; 2) reduction of 1 mm in all the gingival papilla between teeth #13-#23 from the control image; 3) reduction of 2 mm between teeth #13-#23 from the control image; 4) reduction of 1 mm with the presence of black space of all gingival papillae between teeth #13-#23 from the control image; 5) reduction of 1 mm with the presence of black space between the teeth #21-#22; 6) reduction of 1 mm with the presence of black space between the teeth #11-#21; 7) increased by 1 mm in all the gingival papilla between teeth #13-#23 from the control image. The validation of the questionnaire was done by Cronbach's α test. Data were subjected to Kruskal-Wallis. **Results:** The reliability of the questionnaire was considered high. **Conclusion:** Considering the papillary changes from the aesthetic perspective, it can be concluded that dentists were more critical than the lay people.
Analysis of mandibular bone remodeling in rabbits treated with bisphosphonate

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Keywords: bisphosphonates; bone regeneration.

Introduction: The bisphosphonates (BPs) are drugs used to treat various bone pathologies. Although there are reports that show positive aspects of trabecular bone remodeling in patients treated with BPs, the literature also reveals the presence of necrosis and loss of bone tissue when subjected to surgical action in bone of skull and face, revealing a negative effect of BPs on reparative mineralization. Objective: The objective of this study was to evaluate by histomorphometry and radiographic analysis the mandibular bone healing in rabbits treated with bisphosphonates. Material and methods: In this study, 56 rabbits without previous disease were used. A circular non-critical surgical defect, measuring 5 mm in diameter, was created in the jaw of each rabbit to mimic tooth loss. Randomly, the rabbits were treated with BPs (n = 28), 14 rabbits per group, and the remaining were untreated (n = 28). Periods of euthanasia were 15 and 60 days after surgery, with a number of 7 rabbits per period in each group. The analyses were performed histologically and radiographically. Results: The results showed that when the jaw defects were treated with BPS, they demonstrated higher bone deposition than those of control group. Conclusion: Within the limits of this study it can be concluded that the use of bisphosphonates has a positive effect on mandibular bone remodeling in rabbits.
Immunoprofile ratio between osteocalcin (OC) and PPAR-G in PRP-induced bone repair

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Introduction: The premise of PRP use is the rich source of growth factors involved in cell differentiation. Objective: Since bone marrow and bone are contiguous tissues, the aim of this study was to compare the ratio of osteocalcin (OC) and PPAR-g and compare them to the amount of adipose tissue and bone matrix deposited in the craniofacial repair induced by PRP. Material and methods: A 5 mm defect was prepared in 28 rat calvaria. One defect received autogenous bone (positive control), the other 100 uL of the PRP associated with 0.01 ml of autogenous bone. Presence of adipose tissue and bone matrix was evaluated by histomorphometric methods at 2 and 6 weeks postoperatively, while the presence of OC and PPAR-gamma was assessed by immunohistochemistry. Data were analyzed by Student-Newman-Keuls test (α = 5%) and all statistical comparison was done within the same period. Results: Results are always presented for periods of 2 and 6 weeks, respectively. The L-PRP group showed a ratio of OC / PPAR-g.
Comparative study of vitamin E and C systemic action in alveolar bone remodeling of rats

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Keywords:
bisphosphonates; osteonecrosis; free radicals.

Introduction: Vitamins are essential organic compounds for the normal functioning of the metabolism, with radioprotective and antioxidant action. Vitamin C (ascorbic acid) and vitamin E act as antioxidants intercepting and preventing the formation of free radicals that interfere with collagen production and subsequent bone remodeling. Objective: This study aimed to evaluate comparatively the systemic effect of vitamins on the alveolar bone healing after tooth extractions in rats. Material and methods: 15 rats were used (Rattus norvegicus albino Wistar strain), aged approximately 60 days, weighing between 200 and 300 grams, daily receiving 200mg / kg / day of vitamin C and E for 21 days from the surgical procedure. The obtained bone specimens were analyzed by light microscopy to quantify the number of osteocytes. Results: The results found a significant difference between the control group, and groups vitamin C and vitamin E. Conclusion: Group vitamin E showed the best values, followed by group vitamin C, confirming the idea that vitamins favors greater bone repair.
SEM analysis of dental titanium implants surface touched with surgical glove, steel tweezers, and titanium tweezers

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Introduction and Objective: To evaluate by scanning electron microscopy (SEM) whether the surface of dental titanium implants suffer damage by the touch with steel tweezers, titanium tweezers, and surgical glove. Material and methods: Twelve dental implants were divided into 4 groups: Titanium tweezers (TT): the surface of the dental implant was touched 4 times with light pressure by a sterilized tweezers; Steel tweezers (ST): the surface of the dental implant was touched 4 times with light pressure by a sterile steel tweezers; surgical glove (SG): the surface of the dental implant was touched 4 times with light pressure with sterile surgical glove; and control group (implants without touched the surface). Then dental implants were mounted in a metallic support (stub) with the aid of copper strips. It was not necessary to perform plating. The analyses and images (×50 to ×1,500) were performed by SEM (JSM-6360 LV, JEOL, Japan). Results: It was observed in groups TT, ST, SG a change on the surface of dental implants. Group TT showed a deformation in the touched area by leaving a flat and less rough surface. In group ST, the surface was crushed by leaving it smooth. In group SG, it was observed the presence of microparticles modifying the surface uniformity. Conclusion: The dental titanium implants are fragile to compression of different materials, which may modify and deform its surface.
Case Report Studies

Aesthetic resolution of maxillary lateral incisor by implant immediate installation and prosthesis associated with lateral sliding flap

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Introduction: The installation of implants followed by tooth extraction of a single tooth is a common practice in implantology. This procedure is challenging in the aesthetic area. If the bone and gingival architecture of the tooth to be extracted is acceptable, the purpose of the implant will just keep the same morphological conditions. The installation of immediate temporary crown enables the maintenance of the surrounding gingival tissue and papillary height. The challenge, however, occurs when there is not enough gingival tissue to cover the implant fixed in the freshly extracted socket. Objective: This case report demonstrated the aesthetic and functional resolution of a maxillary lateral incisor with labial recession of 6 mm. Case report: A patient aged 56 years, healthy, former smoker, complained about the lack of aesthetics of tooth #22. At clinical examination, there was a 6mm recession with vertical root fracture. The other clinical periodontal parameters were normal. The proposed treatment was extraction of tooth #22, and immediate implant placement (Frictional I, Koop-Brazil) with immediate aesthetic. Due to the lack of labial bone autogenous bone was used, gathered from maxilla tuberosity, on the implant. To increase the gingival volume, subepithelial connective tissue graft and sliding flap was associated enabling the covering of the labial surface of the implant. Then the temporary crown was installed in infraocclusion. Conclusion: The aesthetic and functional resolution success of tooth replacement by implant in aesthetic region relies on the osseointegration knowledge and skill and on tissue manipulation by the surgeon.

Keywords: dental implant; cosmetic dentistry; tissue graft.

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Correction of gingival smile without FLPA: predictability with minimum morbidity

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Introduction: The harmonious relationship between the lips, gums and teeth composed an aesthetically acceptable smile. When not in harmony, the augmentation of the clinical crown can be an alternative for correcting / minimizing gingival smile, or cosmetic differences in the gingival margin. The usual technique is performed by lifting the flap to display the bone crest and posterior osteotomy, but there is also the possibility of gingival smile correction by flapless technique. Objective: To demonstrate and discuss the flapless technique for aesthetic increase of clinical crown. Case report: The surgery started by marking points for incision which was made according to the cemento-enamel junction (CEJ), which is identified by the explorer and measured by millimeter probe. After removal of the gingival tissue collar, the millimeter probe is used again to measure the distance from the gingival margin to the bone crest, which should ideally be 3mm. In areas where this distance is less than the recommended, osteotomy should be carried out via gingival sulcus, with the use of micro-chisels. To check the distance between the new gingival margin and the alveolar crest, a new probing was made. In the last step of the procedure, the improvement of the new margin contour is essential; for this, we use tissue cutting pliers. Conclusion: The flapless surgical technique decreases tissue healing time, local inflammation, and thus the postoperative discomfort. In addition to promoting highly predictable aesthetic results.
Step-by-step approach of extraction sockets in areas of pneumatized maxillary sinus

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Keywords: bone regeneration; sinus; dental implants.

Introduction: The rehabilitation of the posterior atrophic maxilla bone requires a minimum bone amount for installation of dental implants, often impaired due to pneumatization of the maxillary sinus. Accordingly, often, bone grafting procedures are required. For years, many techniques for such rehabilitation have appeared.

Objective: To demonstrate and discuss the possibility of cellular regeneration through Fugazzoto technique associated with autogenous graft and flap closure by Nemcovsky technique for later implant installation.

Case report: First, an atraumatic extraction was performed. Then, with a trephine bur large enough to cover the entire inter-septum and about 50% of the extraction socket was used to prepare the site to approximately 2 mm from the maxillary sinus floor. Subsequently, we used an osteotome with diameter compatible with that of trephine bur, in order to raise the sinus floor together with the septum. In addition, we performed the alveolar grafting with particulate autogenous bone. The alveolar closure was carried out using the technique described by Nemcovsky. After 8 months of healing and bone maturation period, an external hexagon implant (3I) was installed, measuring 6.0x10.0mm, enabling Platform Switching. And after six months, the definitive implant-supported prosthesis was installed that has been in harmony with the peri-implant tissues for 1 year.

Conclusion: It is possible, with great predictability, regenerate extraction sockets simultaneously to atraumatic augmentation of maxillary sinus through the association of unconventional techniques.
Use of PDS II wire as titanium reinforced membrane substitute for guide bone regeneration techniques

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Introduction: The evolution of guided bone regeneration (GBR) has substantially influenced the possibilities for use of implants in sites not previously indicated. For years, a number of techniques for treating these bone defects have appeared traditionally made with resorbable or non resorbable membranes with titanium reinforcement.

Objective: To demonstrate and discuss a new GBR possibility around implants using arched polydioxanone wires (PDS II®).

Case report: the extraction was atraumatically performed through two relaxing incisions and full thickness flap elevation; the extensive defect was noted in the buccal aspect. Then the implant and abutment installation was carried to wait osseointegration. Because many implant screws were exposed due to the defect on the buccal wall, it was decided to perform GBR through reconstruction technique using a scaffold with PDS wire. Four perforations were made on the bone (burs with diameter of 1mm), and within these holes, two x-shaped PDS wires were positioned. This wire served as a base and prevented the collapse of the collagen membrane. To fill and cover the bone defect, we used a synthetic bone substitute (Bone Ceramic) and a collagen membrane.

Conclusion: Although innovative, it is possible, with high predictability, to perform GBR with arched polydioxanone wire (PDS II®) in implants immediately placed. However, it is important to note that more studies are needed to elucidate the histological features of this proposed treatment.
Optimization of immediate implant installation in inter-radicular septum area

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Keywords: implants; tooth extraction.

Introduction: To perform immediate implant installation in maxillary inter-septum area is a challenge, because during surgical preparation the alveolar septum may fracture and impair primary stabilization of the implant. Objective: To demonstrate through a case report, the surgical technique to optimize the immediate implant placement in maxillary inter-septum area. Case report: A female patient, aged 31 years was referred to the Clinics of the Teaching and Research Center in Dental Implants (CEPID) of the Federal University of Santa Catarina-UFSC, complaining of pain when chewing. The clinical examination revealed the presence of a mesial-distal fracture of tooth #16. CT scan showed that the fracture extended up to the furcation area. It was planned to perform the extraction followed by immediate implant installation. To optimize the immediate implant placement and to achieve primary stability, the odontosection comprised first the crown removal followed by the roots. With the help of a periotome, a slight dislocation of the roots was carried out. Then, we used bur sequence indicated by the manufacturer and with the roots still in position, we proceeded with removal of the roots and immediate installation 11 x 3.75 mm cone morse implant was obtained with primary stability of 45N, allowing the construction of the temporary crown. The post-extraction sockets were filled with particulate bovine graft in order to reduce the physiological remodeling. The preparation of the surgical socket with the roots in place prevents the inter-septum collapse and thus, increases the chances of obtaining primary stability.
Introduction: Peri-implantitis is present in 28-56% of patients and in 12-43% of the implants. It is characterized by the association of deep pockets, inflammation of mucosa and peri-implant bone loss. In general, the flora is similar to chronic periodontitis with predominance of gram-negative bacteria. The beneficial effects of chemical-mechanical biofilm removal and the treatment of peri-implantitis demonstrate that the microorganisms are involved in the process. When there is no possibility of adequate access to the contaminated surface of the implants to perform non-surgical treatment, surgical treatment - using flaps and direct view - is the most appropriate and may involve: mechanical debridement of the implant surface, chemical decontamination, implantoplasty, bone grafting and soft tissue grafting. Objective: to present a case in which the surgical therapy was used for peri-implantitis treatment. Case report: A patient aged 45 years attended the Center for Teaching and Research in Dental Implants – CEPID / UFSC with inflammatory changes in peri-implant tissues of the implant in tooth #46 region. After the diagnosis of peri-implantitis, the surgical treatment was performed through mechanical debridement of the implant surface, chemical decontamination with 3% citric acid for two minutes and implantoplasty. After a year, there was involution of peri-implant inflammation, absence of bleeding on probing and stabilization of bone loss. Conclusion: We conclude that surgical therapy may be effective in the treatment of peri-implantitis, but long-term monitoring is needed to ensure successful treatment.
Dream to reality – metal-ceramic total rehabilitation of maxilla supported by implant

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Keywords: dentistry; dental; dental implant.

Introduction: The implant-supported total rehabilitation of maxilla is an effective alternative when one seeks to achieve functional and aesthetic results. In addition to helping improve the masticatory and phonetic performance, the dream of a patient can become reality, "get back my teeth". Objective: To present the clinical steps of a comprehensive implanted-supported rehabilitation of maxilla by metal-ceramic FPDs. Case report: A female patient aged 34 years, worn an acrylic denture, and with 12 pre-installed dental implants, sought for prosthetic rehabilitation. 12 mini-abutments were installed on the implants and transfer impression was performed to obtain the working cast. Then a test base was made with acrylic teeth to evaluate the aesthetic and functional criteria in mouth. From the professional and patient agreement, a wall-shaped silicon impression was executed to construct the infrastructure and completion of definitive prostheses. The metal-ceramic prostheses were fixed passively contributing to an excellent functional performance. Patient has been continuously followed-up. Conclusion: Implant-supported metal-ceramic fixed prostheses are a great alternative when seeking to meet the functional and aesthetic principles of full rehabilitation of maxilla. Thus, modern dentistry acts as a "fairy" able to turn dreams into reality.
Atrophic mandible fracture after surgical rehabilitation with osseointegrated implants: case report

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Keywords: atrophic mandible; mandibular fracture; dental implants.

Introduction: With the increase in life expectancy of the world population and advances in medicine and the pharmaceutical industry, more and more elderly patients have sought for oral rehabilitation, searching an improvement in masticatory function and quality of life. Among these patients are the oral invalid, characterized by severe atrophy of the jaws, making impossible the conventional treatment by complete dentures. An alternative for these patients is the prosthetic rehabilitation associated with dental implants. It is indisputable that implant-supported total prosthesis (overdenture) brings a significant improvement in masticatory function, retention, stability, phonetics and hygiene supplying expectations of patients and professionals. However, in elderly patients with atrophic jaws, the morphological changes are most striking, always occurring the fracture of the mandible. Objective and Case report: The aim of this study was to report a case of mandibular fracture with severe bone resorption resulting from the installation of overdenture supported by two implants the treatment of this fracture by means of rigid fixation and new rehabilitation with implants for making an implanted-supported fixed prosthesis to return the physiological and emotional functions of the patient. The treatment was successful without local complications. Conclusion: The clinical case was successful, but it is noteworthy that the prosthetic surgical planning for cases of mandibular severe atrophy should be thoroughly evaluated, mainly in rehabilitation choice, so that the prosthesis does not overload the remaining basal bone.
Use of titanium miniplates as temporary skeletal anchorage in orthodontics

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Keywords: miniplates; procedures for orthodontic anchorage.

Introduction: The orthodontic skeletal anchorage systems are becoming increasingly versatile and allow the expansion of the possibilities of traditional orthodontic therapy. Fast, predictable and stable movements, applying continuous rather than intermittent forces, enable correction of some deformities that had previously been only possible through invasive orthognathic surgery. Objective: This study demonstrates the surgical procedure and the monitoring of the use of these systems through clinical cases and their outcomes. Case report: Patients with maxilla-mandible deformities underwent orthodontic treatment requiring conventional surgery. The possibility of using miniplates for temporary anchorage was detected. The treatments were recorded at the pre-, trans- and post-surgery and are demonstrated through the following images. Results: Obtaining mechanical stability allows the application of active forces immediate to installation. There was virtually no damage to teeth of the patient, the movement did not depend on patient’s cooperation and the miniplates can be easily removed, being a minimally invasive procedure of lower cost in most cases. Conclusion: The correct indication and technique of application makes this treatment a real possibility of combined approach between the orthodontist and the oral and maxillofacial surgeon.
Surgical approach of a lower third molar impacted and fused with a supernumerary adjacent to the canal mandibular: case report

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Keywords: impacted tooth; supernumerary teeth; tooth abnormalities.

Introduction: The occurrence of mandibular supernumerary molar is rare (<2%). There are few reports in the literature of supernumerary teeth fused to the third molars. Its etiology is still unknown, but hypotheses of changes in the dental lamina cause germination of additional tooth are the most accepted. Objective: The following case is reported because it is considered an uncommon occurrence. Case report: The patient sought dental service of the Federal University of Paraná for surgical removal of third molars for orthodontic indication. The panoramic radiograph shows the presence of an adjacent tooth to tooth #38 compatible with fusion. The radiolucency of dental apexes and disruption of upper cortical of the mandibular canal (MC) suggest its relation to the inferior alveolar nerve (IAN). CBCT confirmed the supernumerary contact with the interior of MC. The patient chose to undergo surgery under local anesthesia. It was necessary to perform a relaxing distal flap to access, buccal osteotomy and 2 buccal-lingual odontosections. The tooth was removed in 3 fragments. The patient had no signs of INA paresthesia and recovered without complications. After surgical exploration, the hypothesis of dental fusion was confirmed also compatible with macrodontia of tooth 38. Conclusion: The management of teeth next to the MC requires accurate diagnostic imaging. This occurrence is rare, with few similar cases in the literature. Its surgical approach requires skill and precision to avoid damage to the IAN.
Oral rehabilitation with single implants in aesthetic area: case report

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Keywords: oral rehabilitation; dental implants; cosmetic dentistry.

Introduction: The implant-supported rehabilitation has a high percentage of successful cases, both for the longevity of treatment and aesthetic and functional areas; however, this success is dependent on several factors. Among them are the inverse planning and proper evaluation of edentulous spaces, according to the amount of hard and soft tissues. Accordingly, the more the patient loses teeth, the harder it is planning, especially when it comes to cosmetic area of the jaw. Although rehabilitation with dental implants in this area is described in the literature, none of the analyzed papers addressed the viability of four individual cosmetic implants in the area of the incisor teeth. Objective: To report a rehabilitation treatment with four dental implants (Straumann® Bone-level) in the area of the upper incisors. Case report: A female patient, aged 51 years, presented the absence of teeth #12, #11, #21, and #22 and rehabilitation was performed with four individual implants in the edentulous area and the bone defect was corrected with autogenous bone graft, bone matrix inorganic bovine (Bio-oss®) and porcine collagen membrane (Bio Gide®). The surgery obtained aesthetic and satisfactory results. Conclusion: The rehabilitation with four single implants in maxillary anterior region can be considered as an alternative treatment for patients with absence of the incisors, with aesthetic and functional satisfactory results, although this information is strictly limited.
Partial resection of mandible with immediate installation of TMJ total prosthesis

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Keywords: TJM; mandible; graft.

Introduction: The mandibular resections are surgeries that cause sequels deforming the face, especially when TMJ resection is included in this procedure. The main indications for placement of condylar prosthesis are: degeneration of the joint, ankylosis and tumors involving TMJ. Objective: To present a case of partial reconstitution of the mandible with complete TMJ replacement. Case report: The case presented is of a young patient who after 8 years of previous diagnosis of an untreated lesion in the right mandibular angle searched the maxillofacial surgery service with upper swelling in right face. At clinical and radiographic examination, the presence of radiolucent tumor in right mandible was diagnosed already showing symptoms of facial asymmetry and local suppuration. It was planned a surgical treatment with use of rapid prototyping and custom fabrication of TMJ prosthesis after partial resection of the mandible. Conclusion: The diagnosis, planning and surgical treatment are benefited with the use of prototyping, which are obtained by a gain in the surgical procedure, better cosmetic result and immediate return to function.
Bone expansion simultaneous to implant installation

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Introduction: Loss of bone volume after tooth extraction, due to bone resorption is a frequent situation in implant clinics. To solve this limitation, the surgeon has several treatment options from the need for more invasive surgical procedures such as previous bone grafts, to use narrow platform implants to rehabilitate the patient. Objective: To report a minimally invasive surgical technique and simultaneous to implant installation thereby avoiding the need to perform a bone graft surgery using a manual bone expander. Case report: In this case the patient had bone thickness of 3mm which limited the use of a narrow platform implant. No intention of making a graft surgery, a bone expansion procedure was carried out by using the threaded expander (Implacil de Bortoli) to achieve an expansion that allowed the installation of an implant of 3.5mm in diameter. With a 1-year follow-up, it was observed an osseointegrated implant and in function. Conclusion: The choice for a less invasive technique for implant-supported rehabilitation whenever possible is a predictable and with considerable success rate technique.
Clinical solution for correction of angled implant without aesthetic impairment

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Keywords: dental implant; oral rehabilitation; dental prosthesis.

Introduction: Treatment with prosthetic implant has a high rate of success in the rehabilitation of missing elements. But a difficulty when working with intermediaries or abutments which do not allow customization of the collar is in relation to aesthetics, especially in thin periodontal tissue regions or implants placed by bone crest, which prevent their masking. The literature describes solutions for implants with correct three-dimensional positioning. However, in cases where it is necessary to correct the angle, few solutions have been described, making it necessary to resort to alternatives to correct the positioning of implants without sacrificing aesthetics. Objective: To use palatal implant screw to enable abutment masking, favoring the appearance and allowing the reversibility offered by a screwed prosthesis. Case report: In the clinical case described, we must remove the cemented prosthesis on the implant of the upper left first premolar region to be used as an abutment for the canine tooth, which was lost and did not have enough bone amounts for implant installation without additional surgery. The abutment used before was CeraOne with esthetic impairment. The proposed treatment was to replace the cemented prosthesis of the first premolar and use of a UCLA abutment to receive a screw by palatal surface. The patient was rehabilitated effectively with low cost and satisfactory cosmetic result. Conclusion: It was concluded that it is possible to use a UCLA abutment to receive palatal screw, so that treatment becomes more aesthetic, also allowing the reversibility because it is a screwed prosthesis.
Rehabilitation of atrophic maxilla with prosthesis fixed on four implants: “all on four”

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Introduction: The total prosthesis fixed on implant has a high success rate and is widespread. However, to be made, the standard protocol is the installation of four to six implants in the mandible, and six to eight in maxilla. The maxillary atrophy is common in total edentulous patients, which may preclude the use of larger amount of implants or require additional surgeries. Objective: To reduce surgical interventions and enable a fixed rehabilitation, the concept of “all on four” emerged, which is the use of only 4 implants without functional and mechanical impairment. Case report: Four external hexagon implants (Implactil De Bortoli, São Paulo, Brazil) were installed in the maxilla, with the posterior ones angled distally in order to reduce the “cantilever”. Because it is important that the last implants are the most distal possible, the maxillary sinus was identified and the implants placed tangent to the same. The remaining implants were distributed equidistant with the aid of a surgical guide previously manufactured. Postoperative and control radiographs were taken after six months. At the end, a predictable novel treatment was provided at a low cost, and reduced treatment time. Conclusion: By using less invasive procedures, the fixed rehabilitation was allowed even on atrophic maxilla, with low treatment time and cost.
Vertical increase in anterior maxila through the nasal cavity augmentation by biooss and bioguide

Introduction: It is described in the literature the difficulty in obtaining vertical bone augmentation, either in the mandible or maxilla, which prevents or limits the rehabilitation with implants. In the anterior maxillary region, anatomical structures such as the nasal cavity and the palatine foramen may interfere with the planning of the case. 

Objective: To surpass this limitation, a technique little described in the literature is the removal of the nasal cavity augmentation through the use of biomaterials. Case report: This case illustrates the surgical technique of detachment of the oronasal membrane and filled with lyophilized graft BioOss (Geistlich Pharma, Switzerland), with simultaneous installation of two implants Morse Taper (Implacil De Bortoli, São Paulo, Brazil) in region of lateral incisors and further cover of the region with BioGuide (Geistlich Pharma, Switzerland). Pre and postoperative CT scans and control were carried out after six months in order to evaluate the increase in height which enabled the rehabilitation with implants even in a limiting region, with a reduced number of surgeries and a favorable long-term prognosis. Conclusion: By using the technique of nasal cavity augmentation by use of biomaterials, it was possible to increase the vertical bony region of the lateral incisors.
Space increase for rehabilitation in the anterior region through occlusal adjustment by addition

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Keywords: occlusal adjustment; oral rehabilitation; dental occlusion.

Introduction: The lack of sufficient space for rehabilitation of anterior cases is a recurring limitation and requires knowledge of occlusion to be surpassed. The small space can be explained by the presence of parafunction and consequent tooth wear and loss of vertical occlusion dimension. To plan the treatment, the patient should be at centric relation to assess whether there is enough space for the restoration of anterior teeth. In cases where this space is large, the stabilization of the occlusion is made through occlusal adjustment by grinding, seeking the largest number of subsequent contacts, prioritizing the maintenance of the space in the anterior region. However, in some cases, this space is limited, preventing the occlusal adjustment by decreasing because 1 mm decreased in the posterior region will reduce 3 mm space in the anterior region. In these cases the recommended treatment is occlusal adjustment by addition, where the patient is at CR and this position is rehabilitated, with touch in the posterior region in premature contact, in the anterior region in rehabilitation, and in later contacts created through restorations or prostheses, distributed in a way to stabilize the occlusion. Objective: To rehabilitate the anterior region through adjustment by addition, the patient needs implant-supported prostheses in teeth #11 and #21 and fixed prostheses in teeth #24 and #22; however, when at maximum intercuspation enough space was not present. Case report: To plan the treatment, the patient was at CR and the presence of space was verified in the area to be rehabilitated, but this was not extensive. To surpass this limitation, the technique of occlusal adjustment by addition was performed. The premature contact was in the tooth #17 and this contact was maintained. To stabilize the occlusion, teeth #14, #15, and #25 were restored with composite resin and provisional crowns of teeth #11 and #21 were made with thickness required for the completion of the work. The rehabilitation of the anterior region through adjustment by addition was satisfactory. Conclusion: With the use of occlusal adjustment technique by addition, it is possible to perform rehabilitation where there is limited space.