

EFFECT OF DISTANCE BETWEEN ONE PIECE IMPLANTS ON CRESTAL BONE RESORPTION

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One-piece implants became incorporate the trans-mucosal abutment facing the soft tissues as an integral part of the implant. The interface between the trans-mucosal component and the implant is generally located in the neighbourhood of the alveolar bone level. One-piece implant are usually welded together and immediately loaded. Since no report is available on the effect of distance between implants on clinical outcome, a retrospective study was performed. Nineteen patients (10 females and 9 males) with a median age of 62 years (min-max 43-80) were enrolled. The mean follow-up was 7 months. A total of 176 one-piece implants (Diamond, BIOIMPLANT, Milan, Italy) were inserted. Among them 11 failed (i.e. survival rate – SVR = 93.75). The remaining 165 were studied as regard peri-implant bone resorption. Since 4 fixtures have a crestal bone resorption higher than 1.5 mm, the success rate (SCR) was 97.57. Log rank testing was used to compare success curves. Statistical analysis demonstrated that an average distance between fixtures of about 2 mm does not determine an higher crestal bone resorption when one-piece implants are used. In conclusion one-piece implants are reliable devices for oral rehabilitation and distance between fixtures of about 2 mm does not determine an higher crestal bone resorption.

EFFECT OF ONE-PIECE IMPLANT DIAMETER ON CLINICAL OUTCOME

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IMPACT OF ONE-PIECE IMPLANT LENGTH ON CLINICAL OUTCOME

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One-piece implants became incorporate the trans-mucosal abutment as an integral part of the implant. The interface between the trans-mucosal component and the implant is generally located in the neighbourhood of the alveolar bone level. One-piece implant are usually welded together and immediately loaded. Since no report is available on the effect of fixture length on clinical outcome, a retrospective study was performed. Nineteen patients (10 females and 9 males) with a median age of 62 years (min-max 43-80) were enrolled. The mean follow-up was 7 months. A total of 176 one-piece implants (Diamond, BIOIMPLANT, Milan, Italy) were inserted. Implant' length was shorter than 13 mm, equal to 13 mm and longer than 13 mm in 40, 39 and 97 fixtures, respectively. Pearson Chi-Square test was used to detect if implant diameter has an impact both on failures (SVR, i.e. lost fixtures) and/or on success (SCR, i.e. crestal bone resorption around implants lower than 1.5 mm). In our series SVR and SCR were 93.75 and 97.57, respectively. Statistical analysis demonstrated that length has no direct impact on survival (i.e. lost implants) as well as on clinical success (i.e. crestal bone resorption). In conclusion one-piece implants are reliable devices for oral rehabilitation (since they have a SVR = 93.75 and a SCR = 97.57) and implant length does not have statistically significant impact on implant failures and crestal bone resorption.

WELDING IMPROVES THE SUCCESS RATE OF ONE-PIECE IMPLANTS

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One-piece implants incorporate the trans-mucosal abutment as an integral part of the implant. One-piece implant are usually welded together and immediately loaded. Since few reports are available on the effect of welding on implant' survival, a retrospective study is performed. Nineteen patients (10 females and 9 males) with a median age of 62 years (min-max 43-80) were enrolled. The mean follow-up was 7 months. A total of 176 one-piece implants (Diamond, BIOIMPLANT, Milan, Italy) were inserted. One hundred and thirty-eight implants were welded. Disease-specific survival curves were calculated according to the product-limit method. In our series SVR is 93.75. Kaplan-Meier algorithm demonstrated that welded implants have a statistical significant better survival than unwelded implants. In conclusion one-piece implants are reliable devices for oral rehabilitation (since they have a SVR = 93.75) and welding procedure reduce the number of lost implants.

BIO GRIP AND MACHINED TITANIUM STIMULATE DENTAL PULP STEM CELLS TOWARDS OSTEOBLASTIC DIFFERENTIATION

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Biomaterials have been utilized routinely during maxillofacial, craniofacial, and orthopaedic reconstructive surgical procedures. To investigate which one between BIO GRIP and machined titanium disk promote a greater osteoblast differentiation and proliferation, the expression levels of bone related genes (RUNX2, SP7, ALPL, SPP1, COL1A1, COL3A1 and FOSL1) and mesenchymal stem cells marker (ENG) were measured in dental pulp stem cells (DPSCs) after 15 and 30 days of treatment using real time Reverse Transcription-Polymerase Chain Reaction. Significantly differentially expressed genes among Bio Grip treated and untreated cells were ENG, FOSL1, RUNX2, COL3A1, BGLAP and SPP1 in the first 15 days of treatment and ENG, FOSL1, RUNX2, COL3A1 and BGLAP after 30 days. Conversely, all genes were differentially expressed among treated and untreated Machined Titanium DPSCs after 15 days. At the end of the exposure, SP7, COL3A1, COL1A1 and ALPL were the only gene differentially expressed. The present study demonstrated both biomaterials, are able to induce bone formation by influencing the expression pattern of gene involved in osteogenesis, extracellular matrix deposition and mineralization.

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SINUS LIFT AUGMENTATION USING AUTOLOGOUS PULP STEM CELLS: CASE REPORT OF BONE DENSITY EVALUATION

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Bone augmentation to reconstruct atrophic jaws provides the base for sufficient functional and aesthetic implant-supported oral rehabilitation. Although autografts are the standard procedure for bone grafting, the use of bone regeneration by means of dental pulp stem cell is an alternative that open a new era in this field. In March 2010, at the Department of Oral Surgery, Don Orione Hospital, Bergamo, Italy, one patient undergo to sinus lift elevation with pulp stem cells gently poured onto collagen sponge. A CT scan control was performed after 4 month and DICOM data were processed with medical imaging software which gives the possibility to use a virtual probe to extract the bone density. Pearson's chi-square test was used to investigate difference in bone density (i.e. BD) between native and newly formed bone. BD in newly formed bone is about the double of native bone. This report demonstrated that stem cells derived from dental pulp poured onto collagen sponge is a useful method for bone regeneration in atrophic maxilla.

COMPARISON BETWEEN HAND AND CUSTOM-MADE CRANIAL VALUT RECONSTRUCTION: A RETROSPECTIVE STUDY

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Since there are no reports comparing hand and custom-made cranioplastics, a retrospective study was performed in order to detect those variables statistically associated to clinical failures. From January 2007 to December 2010, 67 patients (31M/36F; age range 17-82) operated at the Neurosurgery Unit of the Arcispedale S. Anna of the University Hospital of Ferrara, Italy were eligible for this retrospective study. The causes of primary operation were 34 (50.7%) cerebral hemorrhages, 24 (35.8%) traumas, 8 (11.9%) tumors and 1 (1.5%) infection, respectively. Hypertension was a co-morbidity factor in 23 (34.3%) patients. Hypertension was a co-morbidity factor in 23 (34.3%) patients. Cranial vault reconstruction was performed after a mean period of 7 months. The variables analyzed were causes of craniotomy (hemorrhages, traumas, tumors and infections), co-morbidity factor (i.e. hypertension), sites (3 frontal, 12 fronto-temporal, 42 fronto-temporo-parietal, 3 temporo-parietal and 3 temporo-occipito-parietal) and dimension of the defect (maximum diameter smaller than 9 cm, $9 \leq x < 12$ cm, equal or greater than 12 cm). Each patient obtained an excellent aesthetic result. There was no reabsorption, rejections or spontaneous fractures. In two cases the reconstruction was removed in the follow-up period: one case of infected reconstruction and case of mobility of the prosthesis. The overall survival rate was 97%, whereas hand and custom-made SVR were 100% and 95.5%, respectively: thus it was demonstrated that these surgical techniques are safe. PMMA prosthesis is a valid alternative to traditional cranioplasty techniques both aesthetically and in terms of absence of infections / rejections.

EVALUATION OF A NEW NANO-COATING ON IMPLANT OSSEOINTEGRATION: A HISTOLOGICAL STUDY IN MAN

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Titanium is the gold standard among materials used for prosthetic devices because of its good mechanical and chemical properties. When exposed to oxygen, titanium becomes an oxide that is biocompatible and able to induce osseointegration. There are three allotropic forms of titanium dioxide: brookite, rutile and anatase. Anatase can be prepared as a colloidal suspension and then used to coat surfaces. Anatase coating (AC) can potentially have specific biologic effects. Here we test the effect of AC on bone throughout an in vivo study by using spiral dental implants covered with AC and then inserted in humans. The histologic analysis has demonstrated that (1) bone growth at least equal around AC and standard coating fixtures but (2) AC fixtures have an antibacterial propriety that protect implants from subsequent peri-implantitis. This study demonstrated that AC implant guarantee a good osseointegration of normal titanium implants giving in addition antibacterial propriety.

EVALUATION OF A NEW NANO-COATING ON IMPLANT OSSEOINTEGRATION: A STUDY ON SPIRAL FIXTURES INSERTED IN NEW ZEALAND WHITE RABBITS

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CLINICAL OUTCOME OF BACTERCLINE® COATED IMPLANTS: PRELIMINARY REPORT

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Titanium dioxide exists in three different crystal lattices, anatase, rutile, and brookite. Normally, a stochastic distribution of two titanium-oxides (rutile and anatase) is present on the surface of the titanium, and this is responsible for the properties of the material. The anatase coating releases, under UV irradiation, free radicals such as •OH, O₂⁻, HO₂⁻, and H₂O₂. This potent oxidizing power characteristically results in the lysis of bacteria and other organic substances. The purpose of this study was to evaluate the bone response to implants made of titanium alloy or coated with a new combination of anatase and Bactercline® product. This study was approved by the Ethical Committee of the University of Chieti-Pescara, Chieti, Italy. A total of 47 implants with 2 different surfaces (an acid-etched and sandblasted surface-Control; and an acid-etched and sandblasted surface coated with an anatase-Bactercline® solution-Test) (Blasted Wrinkled Surface - BWS) (Dental Tech, Misinto, Italy) were used. In the period between July 2009 and June 2010, 23 patients (8 females and 15 males, median age 51 ±13 years, min 27 max 72 years) were operated and 47 implants were inserted. The mean follow-up was 7 ± 3 months, min 3 max 15 months. Lost fixtures and peri-implant bone resorption were considered as predictors of clinical outcomes. Pearson Chi-square test was used. No implant was lost. The average bone resorption around implant was 0.34 mm (0.341xx mm for 23 standard and 0.338 mm for 24 Bactercline® coated implants), and no statistical difference was detected (p value =0.295). These preliminary results shown that no adverse effects on osseointegration were present and no statistically significant differences Test and Control implants after a mean of 7 months follow-up.

BACTERCLINE® COATED IMPLANTS INSERTED IN MAXILLA GRAFTED WITH BONE FROM LIVING DONOUR: A CASE REPORT

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In the last decade several studies have been performed to evaluate the clinical outcome of implants inserted into grafted maxillae but few focus on maxillae grafted with bone derived from living donors (BDLD). Bactercline® is an anatase derivate which has anti-bacteria proprieties. There are new implant coated with Bactercline®. In January 2010, a 50 year-old female was referred to the Maxillofacial Department of Galeazzi Hospital (Milan, Italy) who had a diagnosis of severely atrophic maxilla which was grafted with BDLD. After 4 months 11 implants were inserted. To evaluate the clinical outcome several variables (i.e. relate to the anatomy, implant, and prosthesis) were investigated. Implant failure and peri-implant bone resorption were considered as predictors of clinical outcome. ANOVA test was used to compare standard to Bactercline® covered implants. The occlusion is stable after 12 months follow-up. No implants were lost. No implant has a crestal bone resorption higher the cut-off value of 1.5 mm. However the mean peri-implant bone resorption was 0.6 ± 0.4 mm in 10 Bactercline® coated implants whereas the only standard implant had 0.01 mm of peri-implant bone resorption. No statistical difference was detected ($p = 0.282$). These preliminary results shown that no adverse effects on osseointegration were present, and no statistically significant differences Test and Control implants after a mean of 12 months follow-up.

AN IN VITRO STUDY OF RESISTANCE TO CORROSION IN BRAZED AND LASER-WELDED ORTHODONTIC APPLIANCES

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Many orthodontic appliances comprise a number of elements soldered together. This technique is known as brazing and has now been in use for over thirty years, although today laser welding is increasingly widespread. Biocompatibility of alloys contained in orthodontic appliances has become a hotly-debated issue and previous studies have shown that it depends on the products of alloy corrosion and their effects on the oral cavity. The present study is intended to compare the corrosion resistance of stainless steel when traditionally soldered - i.e. brazed - and when laser-welded. Samples comprising stainless steel band strips and Remanium® wire were soldered together traditionally (i.e. brazed) and laser-welded and were then left in artificial saliva for 7 days at 37 ± 1 degrees. Corrosion was studied by: a) SEM observation of sample surface morphology before (T0) and after standardized immersion test (T1); b) X-ray microanalysis (EDAX). SEM observation of the brazed samples showed surface corrosion, which was not visible in the laser-welded samples. Our study shows that laser-welded samples have superior resistance to corrosion.

EVERSTICK® AND RIBBOND® FIBER REINFORCED COMPOSITES: SCANNING ELECTRON MICROSCOPE (SEM) COMPARATIVE ANALYSIS

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The aim of the study is to compare morphological features and to evaluate wetting capabilities of two fiber-reinforced composites (FRC_s); group A: Stick Tech®, by Stick Tech Ltd, Turku, Finland, and group B: Ribbond®, by Ribbond Inc., Seattle, Washington, USA, used in orthodontic retention, by scanning electron microscope (SEM). 6 groups were identified in relation to the fiber used, A: Everstick®, B: Ribbond®, and to the different times of exposition to a fluid wetting resin (Heliobond®, by Schaan, Liechtenstein): A1-B1=0 seconds, A2-B2=5 seconds, A3-B3=5 minutes. Wetting was followed by 40 seconds of light curing with a conventional halogen curing light Optilux 501®^d with a light intensity of 930 mW/cm² and a wavelength range of 400-505 nm. Samples were SEM analyzed both in cross section and lengthwise. SEM observation revealed a lengthwise direction of cylindrically shaped fibers immersed in a metacrylate matrix in group A1 and straight but woven fibers in group B1. In both control groups voids ranging between 0 µm and 20 µm were visible between the fibers and groups of fibers. Groups A2 and B2 showed uniform coverage with Heliobond® and microcracks were visible. In cross section views it is apparent that wetting with Heliobond for just 5 seconds was not sufficient for the adhesive to impregnate the fibers deeply. Groups A3 and B3 revealed a deeper penetration of Heliobond®; voids ranging between 5 µm and 15 µm could be observed only in the deepest portion of the fiber. The fiber's preparation plays a decisive role: a longer fiber wetting time with fluid resin before curing, enhances the morphological features of FRC, making them more suitable for passive and active orthodontic systems, periodontology or prosthetic dentistry.

MELANOMA OF HEAD AND NECK: A RETROSPECTIVE STUDY

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This retrospective study was carried out to assess the clinical outcome of a series of 10 histologically proven cutaneous head and neck malignant melanoma (CHNME) treated at the Department of Plastic Surgery, Ferrara University, Italy, in the period between January 2005 and December 2010. There were 5 females and 5 males, age ranged from 39 to 102 years with a mean value of 77 years (standard deviation ± 21 years). There were 1, 6, 1 and 2 Clark's stage I, II, III and IV, respectively. In Breslow's staging there were 6 cases for stage I, 2 for stage II and 2 for stage III whereas T stage there were 7 cases for stage I, 1 for stage II and 2 for stage III respectively. CHNMEs primary localization were cheek, ear, neck, forehead and nose in 3, 2, 2, 2, and 1 cases, respectively. Surgical technique was a resection and immediate suturing in all cases. None had positive neck nodes (N0) at admission and neck dissection was not performed. One case needs a second operation on tumor localization. Chi square test was used to correlate Clark's, Breslow's and T classification to the second surgery case. None of the studied variables was statistically correlated with positive margins. CHNME is a rare tumor and wide resection is mandatory since tumor could be wider than clinical appearance.

CLINICAL OUTCOME OF 205 HEAD AND NECK SQUAMOUS CELL CARCINOMAS

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This retrospective study was carry out to asses the clinical outcome a series of 205 histologically proven squamous cell carcinomas of head and neck treated at the Plastic Surgery Units, Ferrara University, Italy in the period between January 2005 and December 2010. There were 64 (31.2%) females and 141 (68.8%) males, age ranged from 40 to 102 years with a mean value of 82 years (standard deviation \pm 11 years). There were 127 (62%) T1 and 78 (38.7%) T2. Surgical technique was a resection and immediate suturing in 203 (99%) cases whereas resection plus graft was used in 2 (1.0%) patients. None had positive neck nodes (N0) and neck dissection was not performed. Histologically positive margins were detected in 34 (16.6%) cases and a second surgery was needed. Chi square test was used to detect those variables (i.e. T, type of surgery and site) potentially associated with positive margins. None of the studied variables was statistically correlated with positive margins. Head and neck squamous cell carcinoma is frequent in elderly and wide resection is mandatory since tumor is wider than clinical appearance shows.

SKIN LESIONS INDUCED FROM THE RADIOSURGICAL UNIT AND VOLTAIC ARC DERMOABRASION: A RABBIT MODEL.

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The aim of this study was a histological evaluation of skin lesions induced from the radiosurgical unit and voltaic arc dermoabrasion: a rabbit model. Materials and methods: eight New Zealand male rabbits with a weight average 3.9 Kg, participated in this study. Dorsal part of each rabbit was shaven and divided in two equal parts of 5 cm. Voltaic arc dermoabrasion (Plexer, GMV s.r.l. Grottaferrata, Italy) in one side and radiosurgical unit (Laser elettronica Milano 1,75 MH) on the other were used to remove the keratinized layer. In each area were performed 10 sites of abrasion for a total of 20 sites per rabbit. The animals were sacrificed in groups of two at days: 0, 7, 14 and 21 with a Tanax overdose. The treated skin was removed using a scalpel and a block section containing the subcutaneous layer was effectuated. There were obtained 20 biopsies from each block section, 10 performed with el- bras and 10 with radiosurgical unit for a total of 40 biopsies per study time. Results: the present results demonstrated the possibility on containing the thermal damage of the lesions adjacent tissues using dermoabrasion. There were no observations of thermal damage on the underlying dermal tissue. Absent necrotic layer on the healing process was shown but an inflammatory infiltrate was present. The reduced thermal damage on the subcutaneous tissue is probably due to the current passage absence on the tissues. This is necessary to close the electric circuit between the active electrode and the neutral one in which the patient is part when using the radiosurgical unit. The arc voltaic dermoabrasion technique in comparison with the electrosscalpel demonstrated the capability to contain the damage within the parenchyma.

DENTAL PULP DERIVED STEM CELLS DIFFERENTIATION AFTER ALGIPORE® TREATMENT

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Autologous cell transplantation in combination with a biodegradable scaffold is one of the most promising bone regeneration techniques in craniofacial and orthopaedic surgery. Algipore®, a hydroxyapatite ceramic obtained from red alga, is largely employed as scaffolds in bone regeneration. For this reason, we studied how Algipore® can induce osteoblast differentiation in stem cells derived from dental pulp, measuring the expression levels of bone related genes and mesenchymal stem cells marker by real time RT-PCR. The obtained results demonstrated that Algipore® enhance differentiation and deposition of matrix in stem cells by the activation of osteoblast related genes FOSL1 and SPP1 and the disappearance of the mesenchymal stem cells marker, ENG.

ALLOGRO® OSTEOGENIC POTENTIAL EVALUATION IN DERIVED PULP STEM CELLS

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Tissue engineering for bone grafting may emerge as an alternative to autogenous bone grafts. Allogro® a demineralized freeze-dried bone allograft is useful as a scaffold to restore bone loss in orthopedic and maxillofacial surgery. In order to get more inside how Allogro® can induce osteoblast differentiation in mesenchymal stem cells, the expression levels of bone related genes and mesenchymal stem cells marker were compared in human osteoblasts and dental pulp stem cells, using real time RT-PCR. The obtained results demonstrated that Allogro® enhance stem cells differentiation and deposition of matrix by the activation of osteoblast related genes FOSL1 and SPP1 and the disappearance of the mesenchymal stem cells marker, ENG.

OSTEOBIOL® INFLUENCES OSTEOGENIC DIFFERENTIATION OF ADIPOSE DERIVED STEM CELLS

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OsteoBiol® is a cortical collagenated porcine bone largely employed as substitute for bone grafting. In animal model porcine bone showed good biocompatibility and osteoconductive properties. To study how cortical porcine bone can induce osteoblast differentiation and proliferation in mesenchymal stem cells, the expression levels of bone related genes (RUNX2, SP7, ALPL, SPP1, COL1A1, COL3A1 and FOSL1) and mesenchymal stem cells marker (ENG) were measured in Adipose Derived stem cells (ADSCs) and Human Osteoblasts (HOb) cultivated with OsteoBiol®. OsteoBiol® induces up-regulation of SPP1 and ALPL during the first 15 days of treatment both in treated ADSCs than in treated HOb. In particular the up-regulation of SPP1 demonstrated that this biomaterial is actively resorbed by human osteoclasts.

OSTEOPLANT® MODULATES GENES EXPRESSION IN ADIPOSE DERIVED STEM CELLS DURING OSTEOBLAST DIFFERENTIATION

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OsteoPlant® is an equine cortical and spongy bone tissue, used to fill bone defects in orthopedic, maxillofacial and dental surgery. To study the mechanism by which OsteoPlant® induce the reabsorption and the substitution of the graft with new bone, the expression of genes related to the osteoblast differentiation were analyzed using cultures of stem cells derived from adipose tissue treated with OsteoPlant®. Gene expression profile, obtained with real time Reverse Transcription-Polymerase Chain Reaction demonstrated that OsteoPlant® influences the differentiation of adipose derived stem cells by the activation of bone related genes like osteopontin (SPP1) and alkaline phosphatase (ALPL).

A COSMETIC TECHNIQUE CALLED LIP REPOSITIONING IN PATIENT OF EXCESSIVE GINGIVAL DISPLAY

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Excessive gingival display can be managed by a variety of treatment modalities, depending on the specific diagnosis. A 29-year old woman was referred to the Unit of Oral Surgery of the University of Chieti-Pescara by her dentist for a consultation regarding a gummy smile. A partial-thickness dissection was made. The epithelium and connective tissue was excised. Tissue tags were removed. The mucosal flap was advanced and sutured at the mucogingival junction using 5-0 polypropylene sutures and 4.0 chromic gut sutures. No periodontal dressing was placed. Postoperative instructions included recommendations for limited facial movements, no brushing around the surgical site for 14 days, and placing ice packs over the upper lip. This treatment modality was effective, producing esthetically acceptable smiles in these patients. This case report demonstrates the successful management of excessive gingival display with a lip-repositioning procedure.

ORAL REHABILITATION IN A PATIENT AFFECTED BY AMYOTROPHIC LATERAL SCLEROSIS

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Amyotrophic lateral sclerosis (ALS) represents a neurodegenerative disorder characterized by progressive muscular paralysis reflecting degeneration of motor neurons in the primary motor cortex, brainstem and spinal cord. Degeneration of the upper and lower motor neurons leads to spasticity, impaired reflexes, muscle fatigue, muscle weakness, and eventually atrophy. Affected individuals vary significantly in the locus of disease onset, presentation at diagnosis, and rate of progression. Progressive degenerative disease such as ALS put young patients in a non-self-sufficient condition, leading to an increasing strain in terms of time and money for their families and caregivers. Moreover, patients with severe abnormalities of stomatognathic system worsen their conditions and caregivers situation, increasing the work stress. The Authors describe a case of 35 years old ALS disabled patient, affected by chronic aggressive periodontitis and multiple carious lesions in poor oral hygiene condition. The Authors believed necessary to implement easy prosthetic solutions in terms of construction, cost, effectiveness and easy maintenance over time. Thus, the treatment provided a fixed prosthetic rehabilitation by endosseous implants in both arches according to the Columbus Bridge protocol. In conclusion, the implant-prosthetic technique proposed represents a viable treatment choice in all those cases in which it's necessary to provide immediately an effective and safe dental prosthesis. The prosthetic implants stabilization by bar ensures a high predictability of osseointegration over time.