

MRI FINDINGS OF WORKING AND NON-WORKING TMJ DURING UNILATERAL MOLAR CLENCHING ON HARD BOLUS

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The aim of this study is to evaluate with MRI the TMJs behavior during one-side clenching on a hard bolus. The sample consisted of 13 patients. an MRI of TMJ using a 1.5 Tesla superconducting magnet and a dedicated surface coil was performed in all patients. Parasagittal scans of the TMJ (perpendicular to the long axis of the condyles) were made with the mouth closed, open and with a plastic thickness 10 mm high, 15 mm wide and 20 mm long always interposed between the molars of the left side; TSE T2W and DPW sequences were used. The working condyle is always positioned behind the non-working contralateral condyle and the morphology of the retrodiscal tissue upper lamina was curvilinear in all TMJs examined. This work confirmed that, during clenching on a unilateral hard bolus, the working condyle translates less than the balancing one and that the condyle-disc ratios are substantially the same in both sides. The study of the retrodiscal tissue imaging in the different functional phases, suggest that it does not exert any pulling force towards the disc.

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COMPUTER - GUIDED IMPLANT SURGERY: ANALYSIS OF DYNAMIC NAVIGATION SYSTEMS AND DIGITAL ACCURACY

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After the static computer-guided implant surgery, borns the concept of “navigated implantology” (NI) that offers significant advantages in the treatment planning and help clinicians to perform successful implant rehabilitation. NI allows an optimal final location, to avoid the risk of damaging the noble anatomical structures near the site and allows the achievement of satisfactory aesthetics. The aim of this study is analyze three different systems: the RoboDent® system (Berlin, Germany, 2001), today not for sale, was the first implant navigation system introduced on the market and made the history of dynamic surgery; X-Guide (Nobel Biocare, 2017), a dynamic computer assisted system that uses the principles of stereoscopic triangulation by optical video cameras. And last, the Navident® dynamic navigation system (Toronto, Canada, 2015), produced by the Canadian company ClaroNav, evolved from the Navient brand used in orthopaedic surgery, neurosurgery and otolaryngology, sharing the motion tracking technology. Dynamic computer assisted surgery systems allow more accurate implant placement when based on an accurate 3D CT-based image data and an implant planning software which minimizes errors and simplify the surgical technique.

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APPEARANCE OF NORMAL MRI ANATOMY OF THE LINGUAL NERVE USING STEADY-STATE FREE PRECESSION SEQUENCES AT 3-T

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The aim of this study is to assess the value of SSFP MRI sequence in depicting the normal anatomy of the lingual nerve (LN), particularly in the molar region, in order to help the periodontists, dentists and oral surgeons in their daily practice. The study group included 24 patients who were to undergo MR study for a reason unrelated to our purpose. All imaging was performed by using a 3.0T system with a head and neck multiarray coil. The evaluation criteria included image quality factors such as the identification of the LN, its demarcation and its contrast to surrounding tissues on a five-point scale. The LN is clearly visible throughout its course from its origin from the mandibular nerve (MN) to the mylohyoid muscle. In edentulous patients, the LN could be damaged during surgical procedures specially it during the dissection and retraction of a lingual flap and, above all, during the suture due to a direct trauma caused by the needle or indirectly during tying the knot.

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THE EFFECTIVENESS OF SUBGINGIVAL IRRIGANT OZONE-BASED AS ADJUVANT FOR NON-SURGICAL PERIODONTAL THERAPY IN THE TREATMENT OF CHRONIC PERIODONTITIS: A REVIEW

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The aim of this review was to establish the efficacy of Ozone therapy (OT) in Periodontal disease's (PD) treatment. An electronic search of publications was established from two electronic databases: PubMed and Web of Science. The search strategy used a combination of controlled vocabulary and free-text words. Inclusion and exclusion criteria were defined by the authors before the start of the study. The inclusion criteria were: all studies published in English language; studies in vivo on humans; studies analyzing the correlation between PD and OT. The search resulted in 102 titles. Only 9 articles were included in the quantitative analysis. By the analyzed studies a strictly connection is still not evincible. More clinical trials are recommended to investigate the role of ozone, in its various types of topical administration, as a valid subgingival irrigant to achieve the goal of periodontal tissue health.

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REHABILITATION OF A SEVERE MANDIBULAR ATROPHY WITH FOUR-MILLIMETER EXTRA-SHORT IMPLANT AND GUIDED BONE REGENERATION (GBR): CASE REPORT WITH 7-YEARS FOLLOW-UP

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The aim of this study was to report the use of extra-short and short implants in combination with Guided Bone Regeneration (GBR) to rehabilitate a case of severe mandibular reabsorption. A 55-year-old female patient asked for a fixed implant supported rehabilitation in 4.5 – 4.6 zone which showed severe atrophy. It was decided to use an extra-short 4 mm length and 4.1 mm Ø, Roxolid and SLActive implant (Straumann Standard Plus Regular Neck, Institut Straumann AG) in 4.5 position and a short 6 mm length and 4.8 mm Ø, Roxolid and SLActive implant (Straumann Standard Plus Wide Neck, Institut Straumann AG) in 4.6 position. The implants supported cemented fixed prosthesis. Examinations were performed at the day of the surgery and up to 7-years in function to evaluate implant stability and periapical radiography. One extra-short implant and one short implant were placed. After 7 years in function no biological or prosthetic complication were recorded. Within the limitation of this case report, the use of short and extra-short implants to support fixed prosthesis seem to be a feasible treatment alternative in severe mandibular atrophy.

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DIODE LASER AS AN ADJUNCT TO NONSURGICAL CHRONIC PERIODONTITIS THERAPY: A REVIEW

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The aim of this review was to investigate the additional effects of diode laser irradiation in combination with nonsurgical periodontal therapy. An electronic search of publications was established from three electronic databases: Cochrane, PubMed and Web of Science. The search strategy used a combination of controlled vocabulary and free-text words. Inclusion and exclusion criteria were defined by the authors before the start of the study. The inclusion criteria were all studies published in English language, randomized controlled trials, based on human subjects. All trials were designed to evaluate the efficacy of the diode laser therapy as an adjunct to nonsurgical periodontal therapy in the treatment of chronic periodontitis patients. All studies analyzed are not older than five years. The search resulted in 188 titles. After the analysis of the abstracts, an article was excluded because it was not relevant for the study and two because it treated aggressive periodontitis. At the end only 6 articles were included in the qualitative analysis. The potential role in chronic periodontal disease treatment of diode laser is still not demonstrated. Several studies regard the diode laser therapy, but there is still heterogeneity for what it concerns research and clinical protocols. As a result, several randomized controlled trials are needed to obtain certain data.

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AESTHETIC CORRECTION OF DOUBLE TOOTH: SIMPLIFIED TECHNIQUE

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The aim of this study is to report aesthetic conservative treatment of double tooth anomaly. Case report: A 7.5-year-old patient presents an anomaly of the maxillary right upper central incisor with a bifid crown and an increased mesio-distal width and a central incisal notch, probably amenable to a gemination. Single tooth anesthesia and conservative enameloplasty procedure was performed, with universal adhesive and a single shade universal composite restorative material. Adhesive aesthetic restorations allow to resolve dental anomalies quickly, cheaply and easily for pediatric dentistry.

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EPIDEMIOLOGICAL STUDY ON RADIOGRAPHIC DENTAL HEALTH IN ALBANIA

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The aim of this epidemiological study is to assess the dental health status of the Albanian population and the most frequently performed dental treatments, also highlighting the differences between sex, geographic area and educational level. The study was performed by analyzing digital orthopantomographic radiographs of 739 Albanian patients, male and female, divided into 5 age groups. In addition, the patients were divided according to regions of origin in North, Centre and South and classified according to the level of education. The parameters examined are as follows: Missed Teeth (MT), Filled teeth (FT), Endodontically treated teeth (TT), Prosthetic restorations (PR). There are no statistically significant results regarding the distribution by area. Subjects with at least one missing tooth (MT) decreases with increasing education level. The percentage of individuals with Missed Teeth in the population increases with increasing age groups. Educational background affects health. This study highlights the need to introduce a national oral health system in Albania that would extend interventions to a wider segment of the population.

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ANTIBACTERIAL ACTIVITY OF FIRST AND LATEST GENERATION BIO-CERAMIC SEALERS ON THE ELIMINATION OF ENTEROCOCCUS FAECALIS: AN *IN VITRO* STUDY

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The main concern of endodontics are bacteria: the microorganisms and the toxins they release determine tissue destruction and inflammatory changes that trigger the pulpal and periapical pathology. Enterococcus faecalis is a particularly hostile bacterium; it is strongly associated with refractory periapical pathology. In this study 3 materials were tested: Aureoseal (OGNA, Italy) (Aur) (first generation bioceramic sealer); Endo Sequence BC sealer (Brasseler USA, Savannah, GA, USA) (EsBC) (latest generation bioceramic sealer); EndoDrox (OGNA, Italy) (Endx) (calcium hydroxide material). The antimicrobial activity of these materials against Enterococcus faecalis was evaluated using agar diffusion test (ADT). The results confirm the antibacterial activity of bioceramic sealers, which however do not show significant differences in the obtained values; it can therefore be concluded that there has been no increase in the antibacterial efficacy of the latest generation bioceramic sealers compared to those of the first generation.

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PREVENTIVE CONTAMINATION WITH *LACTOBACILLUS REUTERI* OF THE IMPLANT-ABUTMENT CONNECTION: AN *IN VIVO* STUDY

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The aim of this study is to preventively contaminate the abutment-fixture connection (AFC) with *Lactobacillus reuteri* (*L. reuteri*), to evaluate the presence of micro leaks in different types of implant-abutment connections, by measuring the concentration of *L. reuteri* in the sulcular fluid over time. This microorganism produces the Reuterine, an antibiotic which counteracts the development of other microbial species. Fourteen biphasic implants were placed on 10 patients (3 women; 7 men; mean age 55.9±16.54y). Eight implants had a flat top connection (internal Hex) while six implants had a tapered connection (conical plus octagonal). At the time of prosthetic finalization, before the healing screw was removed, the sulcular fluid was harvested, on each implant, by means of three sterile paper cones placed into the gingival sulcus and left in place for 20sec before to be transferred to a sterile tube. Once the healing screw has been removed, first the implant connection has been gently dried with air jet for 10sec and then completely filled with *L. reuteri* DSM 17938 (Reuflor, Italchimici, Italy). Immediately after the prosthetic finalization the sulcular fluid was then harvested again, with the same procedure described before, and repeated at 1 week and 1 month of follow up. The samples were then sent for subsequent DNA extraction and real-time PCR. Our results demonstrate that the concentration of *L. reuteri*, in the sulcular fluid, does not persist over time in case of preventive contamination of the AFC, demonstrating no significant differences between flat top and tapered connections. Therefore, the use of the latter does not lead to a lower risk of Peri Implant Disease (PID). Long-term studies, involving a larger number of samples, are advisable to confirm these findings.

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THE USE OF OZONE THERAPY FOR TREATMENT OF PERIODONTAL DISEASE: A SPLIT-MOUTH, RANDOMIZED, CONTROLLED CLINICAL TRIAL

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Periodontal treatment has the aim to reduce oral infection and prevent the progression of the disease. The potential benefits of new therapy with Ozonline® for periodontal treatment, include improved patient compliance and an easier access to periodontal pocket. The objective of this study was to explore the efficacy of Ozonline® in the treatment of chronic periodontitis in adult patients. A randomized controlled split-mouth study was carried out in ten patients (5 men and 5 women age 42-73 mean 55 ± 7) with a diagnosis of chronic periodontitis. None of these patients received any surgical or non-surgical periodontal therapy and demonstrated radiographic evidence of moderate bone loss. The mouth has been divided into upper right and left quadrants. The upper and lower right quadrants were treated with ultrasonic scaler, the left quadrants with ultrasonic scaler with ozonated water (Ozonline®). 10 microbiological samples were collected from upper left quadrants and 10 from upper right quadrants from each patient. Microbiological samples were collected from the sites of the patients at baseline and at the 7th day. 20 localized chronic periodontitis sites were selected (10 in left quadrants and 10 in right quadrants). After the treatment with Ozonline®, a remarkable decrease in bacteria amount, both for some species and for the total count was observed in the left quadrants respect to right ones. Specifically, *T. forsythia* and *T. denticola* were eradicated whereas Total Bacteria Loading and *Fusobacterium Nucleatum* showed a reduction of 38% and 55%, respect to right quadrants. Our study demonstrated the efficacy of the Ozonline® in the management of moderate to severe chronic periodontitis.

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MESENCHYMAL STEM CELLS IN ORAL MEDICINE: AN OVERVIEW

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This review aims to address the procedures and indications, required for the application of the mesenchymal stem cells treatment strategy of regenerative dentistry. Mesenchymal stem cells have rarely been used in this field; conversely, experience from other clinical fields and basic research seems to recommend the suitability of this scope of application. We reviewed 31 out of 206 articles on Web of Science, Scopus, PubMed, etc. The main purpose of this paper is a short review of the literature evaluating the application of stem cells in regenerative dentistry, their ability to get a multilineage differentiation and to introduce a safe and useful alternative way of harvesting and selection. The most common derivation of stem cells used for regenerative dentistry is from the adipose tissue. There are conditions in which the levy adipose cannot be easily achieved, or where large amounts of injectables are not needed. For this purpose, the possibility of selecting stromal stem cells directly from the lax subcutaneous connective tissue preferably of the head region would allow a technical simplification and a greater homology in tissues.

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USE OF EXTRA-ORAL SCANNER FOR THE STUDY OF ARCH FORM IN A SAMPLE OF ITALIAN ADOLESCENTS WITH IDEAL OCCLUSION

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The aim of this study was to evaluate the shape and the average size of the maxillary and mandibular arch in an Italian adolescents sample with correct occlusion, using the digital technology. The study sample was composed, after the use of an extra-oral scanner and after the application of inclusion and exclusion criteria, by the digitized dental casts of 79 Italian adolescents (39 females and 40 males), aged 14±1 years, with correct occlusion. On each model, both upper and lower, the reference points of the dental arches (FA), of the alveolar bone (WALA ridges) and of the incisal edge of the central incisors were identified. With these points, using a software, fourteen parameters were evaluated for each cast: basal and dental intermolar and inter-canine width, basal and dental molar and canine depth, basal and dental molar and canine ratio, overjet, overbite. Finally, the shape of the arches was assessed, dividing it into ovoid, triangular or square. Chi-square test and Student's T-test for each parameter were adopted with a $p < 0,05$ significance level. The results showed that the ovoid form was the most frequent, followed by the triangular one for the upper arch and by the rectangular one for the lower arch. On the canine level, both upper and lower, both for dental and for basal references, the triangular shape showed the lowest width and ratio values and the highest depth values in comparison with the other two groups. The square one showed the opposite situation, and the ovoid one presented in the intermediate value. On the molar level the trend is quite similar to the canine one. The results obtained maybe suggest that on a significant percentage of the patients of the sample is expected to use a preformed ovoid arch wire, and the data found could be useful to study the adequacy of the arch wires currently on the market or to design new ones.

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FACIAL GROWTH AND MORPHOLOGY OF CLEFT LIP AND/OR PALATE PATIENTS AFTER CORRECTIVE SURGERY ACCORDING TO P.I.S.A. TECHNIQUE

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Cleft lip and/or palate patients (CLP) undergo corrective surgery that can affect facial growth. The aim of this study was to analyze facial growth and maxillary development of CLP subjects after surgery according to P.I.S.A. technique (Peri osteoplasty Improves Symmetry and Aesthetic). Cephalometric tracings of 55 patients were performed, thirty-three of which belonged to the test group, while the last twenty subjects were part of the control group. The test group was formed by cleft lip and/or palate patients after surgical repair according to P.I.S.A. technique. The control group included patients unaffected by this malformation, with an Angle's first class, selected from the Michigan Growth Study sample. Facial growth and upper maxilla development analysis was carried out by comparing the data obtained from the cephalometric traces of cleft patients who performed an early surgery, with the values of the same parameters measured in non-cleft subjects, providing the normal values. The results of this study showed, in the test group, a maxillary and mandibular bi-retrusion, a more negative facial convexity, the absence of a marked discrepancy in the skeletal relationships, a slight tendency towards hyper-divergence.

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IMPACT OF SJÖGREN'S SYNDROME ON ORAL HEALTH AND QUALITY OF LIFE: AN OBSERVATIONAL CROSS-SECTIONAL STUDY

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Sjögren's Syndrome is a complex disease, due to an autoimmune physiopathology, that strongly impacts both patients' primary needs (nutrition and speaking), and patients' relationship life related factors (psychological health and quality of life). In Literature, few studies had investigated oral health status in Sjögren's syndrome and its impact on patients' quality of life, so the aim of this study was to analyse that issue. 30 patients were enrolled, within the Department of Rheumatology (University of Pisa), both first diagnosis patients' and both patients who had been diagnosed with Sjögren's syndrome in the past. For each patient, a medical record was filled out together with the compilation of the Oral Health Impact Profile questionnaire. Then, during a specialistic rheumatologic visit, Sjögren's Syndrome Disease Damage Index Score (SSDDI) was determined. Results showed a direct proportion between years from diagnosis and severity of oral health issues. It was found that these issues were related to soft tissue damage and an overall worse, reported quality of life and psychological health.

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LASER IN PERIODONTAL POCKETS: IN VIVO AND IN VITRO STUDY

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The aim of this study was to verify the sterilizing effectiveness of the laser in the treatment of the periodontal pockets *in vivo*, with the recording of clinicians' parameters and microbiological analysis, and *in vitro* with particular attention to the presence of specific bacterial stocks. During our study, in particular, it has been used the diodes laser. In order to estimate the effectiveness of the treatment of the periodontal pockets with laser, it has been examined the microbial content of the pockets carrying out withdrawals of the sulcular material before, immediately after and twenty minutes from the radiation. The microbiological results of the studies assert that, although substantial qualitative discrepancies between the several colonies of pathogen do not exist, quantitative differences are taken place with respect to the lessening of number and dimension of the present colonie.

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IMPLANT-SAFE TEST IN PATIENTS WITH PERI-IMPLANTITIS

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Matrix metalloproteases (MMPs) are a family of zinc-dependent endopeptidases, produced by numerous cell types including fibroblasts, endothelial cells, osteoblasts, macrophages, lymphocytes and neutrophils, and capable of degrading different components of the extracellular matrix (ECM), but also cytokines, receptors and factors that regulate cell motility (1). MMPs represent the main proteolytic enzymes involved in the remodeling and degradation of the components of the extracellular matrix, in the modifications of interactions between cells, and those between cells and the ECM that regulate, for example, the processes of cell migration (2, 3). Due to these characteristics, the MMPs are involved in numerous physiological processes (angiogenesis, apoptosis, bone remodeling, wound repair, morphogenesis, inflammation, immune response) response to incongruous conservative and endodontic treatments (29-37, 46, 47) and pathological (periodontitis, arthritis, cancer, cardiovascular diseases, neurological diseases, osteoporosis etc.) (5). Metalloproteinase-8 (MMP-8) is an important indicator of tissue decomposition and is present in case of periodontitis in the gingiva and in the sulcular fluid. The concentration of MMP-8 in the sulcular fluid of patients with chronic or aggressive periodontitis is higher than that found in healthy patients (4, 6). MMP-8 was also significantly correlated with gingivitis index, plaque index, probing and clinical attack level. For this reason, the concentration of MMP-8 in the sulcular fluid could constitute a useful index to monitor periodontitis activity and be used to predict disease progression, also because of orthodontic treatments (38-45). Patients with periodontitis had elevated concentrations of MMP-8 salivary compared to patients with gingivitis and healthy tissues. Through this experimentation we wanted to demonstrate the real effectiveness of using this test as a means of preventing peri-implant pathology.

0393-974X (2020)

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DISCLOSURE: ALL AUTHORS REPORT NO CONFLICTS OF INTEREST RELEVANT TO THIS ARTICLE.

AUTOTRANSPLATATION OF IMMATURE THIRD MOLARS AS SUBSTITUTES FOR CONGENITALLY MISSING SECOND PREMOLARS: AN ALTERNATIVE SOLUTION IN A YOUNG PATIENT WITH OLIGODONTIA

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Auto transplantation of immature donor teeth can be a strategic therapeutic solution in young patients. It is preferable to choose this approach instead of prosthetic restorations because it offers a unique and definitive solution. Orthodontic space closure is not always deemed desirable, especially in non-extraction cases (53,54). Successful auto transplantations allow alveolar growth through eruption of donor teeth together with the adjacent dentition when skeletal and dental development is not yet completed. Auto transplantation of third molars is less well-recognised and less documented. The available literature shows promising success rates. Immature donor teeth are reportedly associated with better outcomes than mature donor teeth. Aim of this case report was to analyse the short-term outcomes of auto transplantation of immature maxillary third molars to replace the missing mandibular second premolars in a 17-year-old healthy female with oligodontia. The surgical procedure was performed as a single step. Left and right lower second deciduous molars (7.5-8.5), close to exfoliation, were extracted. Donor upper third molars with developing root were extracted as traumatically as possible and immediately placed into the surgically modified recipient sites. They were stabilized by a sectional wire. One year after surgery, the survival of both transplanted teeth was achieved. They showed periodontal health, normal mobility and continuation of root development during the follow-up period. The upper left third molar responded to all success criteria, no signs of ankylosis, root resorption (infection or inflammatory), and pulp necrosis. The upper right third molar had long-standing evidence of not progressive cervical external inflammatory root resorption without any clinical signs. Further research is needed to determine their long-term survival and success rates.

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BRUMA MAD: A NEW WAY OF TREATING OSAS PATIENTS

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The aim of this study was to introduce a new adjustable device in the treatment of obstructive sleep apnea syndrome (OSAS). The new appliance has a different way to regulate and move the mandible through the presence of two occlusal lifts, that can leave an open posterior space, and the complex system formed by the peduncle and the steel plate that can easily move forward the mandible. This system guarantees a posterior space for the tongue but mostly for the passage of air. The principal aim of Bruma MAD is to contrast the pharyngeal collapsing and to prevent hypopnea or apnea. Further clinical studies are needed to confirm and to evaluate the predictability of this new device.

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THE DENTIST'S ROLE IN DIAGNOSIS AND TREATMENT OF OBSTRUCTIVE SLEEP APNEA SYNDROME: A LITERATURE REVIEW

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The purpose of this work was to present a review of the literature concerning obstructive sleep apnea syndrome, and the role of the dentist in this pathology, both to identify elements useful for a good diagnosis and to apply the available therapeutic strategies. In literature there is no unanimous opinion on the treatment of OSAS. The multidisciplinary approach is necessary, creating teams made up of dentists, otolaryngologists and medical experts in sleep disorders, in order to develop a cooperation-based treatment plan for the disease. In this review, the importance of early diagnosis, orthodontic therapy in order to restore normal function is underlined, since OSAS is linked to a high risk of hypertension, cardiovascular diseases, daytime sleepiness, domestic and work accidents, with consequent deterioration of the quality of life.

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HISTOMORPHOMETRIC EVALUATION OF BOVINE BONE AND EQUINE BONE MATRIX IN MAXILLARY SINUS FLOOR AUGMENTATION: A SYSTEMATIC REVIEW

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The aim of this study was to evaluate the efficiency of bovine and equine bone substitute materials used in sinus augmentation techniques. The research protocol was carried out using the PubMed database, including articles from October 2019 until February 2020 and those in English only. The search on PubMed (MED-LINE) was carried out with the following keywords: sinus augmentation OR sinus lift AND bovine bone graft OR equine bone matrix. The articles identified included randomised clinical trials, cross-sectional studies and case series. Outcomes were the percentage of newly formed bone, remaining graft particles and soft tissue in a follow-up at least of 5 months. The use of bovine bone graft (ABB) as a graft material in maxillary sinus elevation was evaluated in 9 studies. According to the quality assessment, 4 of the 9 studies were analysed and an arithmetic mean was performed showing the following results: newly formed bone (NFB 22.74%), residual grafts (RG 29.36%) and soft tissue percentage (SF 48.51%). The use of equine bone matrix (EBM) was assessed in four different studies including an RCT, a cross-sectional study and two case series; a mean percentage calculated by the extracted data of the four studies was estimated with newly formed bone (NFB 44.51%), residual grafts (RG 17.24%) and soft tissue percentage (SF 36.62%). EBM appears to be as effective as ABB for the maxillary sinus floor augmentation procedure.

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