#### NAVIGATION-ASSISTED MICROSCOPIC REMOVAL OF HYPOPHYSEAL ADENOMA: A RETROSPECTIVE STUDY

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Neuronavigation is a commonly used technology that provides continuous, three-dimensional information for the precise localization of and surgical trajectory to brain lesions. This study was performed to evaluate the role that navigation can play in assisting microsurgical trans-sphenoidal surgery for precise localization and removal of pituitary tumours while simultaneously preserving pituitary gland function. Six patients (3 males and 33 females) with ypophyseal adenomas were treated with neuronavigation-assisted removal. Surgery was performed via endonasal trans-sphenoidal approach. Three patients had residual adenomas and two of the relapsed. There was one post operative rhinoliquorrea. In two cases the visual deficit did not significantly improved after operation. No statistical significance was detected among tumor dimensions with residual tumor, surgical complication (i.e. rhinoliquorrea), persisting visual deficit and used of abdominal fat for closing the sphenoidal field, respectively. Microneurosurgical trans-sphenoidal techniques combined with neuronavigation systems can precisely define the localization and removal of lesions in the sella region with respect to the margins of important anatomical structures in the neighbourhood and the endocrinological functionality of the pituitary gland. Neuronavigation can be easy applied during endonasal trans-sphenoidal microscopic surgery and requires a minimal amount of time. It makes operation easier, faster, and probably safer.

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# COMPARISON BETWEEN ENDOSCOPIC VS. MICROSCOPIC REMOVAL OF HYPOPHYSEAL ADENOMA: A RETROSPECTIVE STUDY

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To compare endoscopic and neuronavigation-assisted microscopic removal of hypophyseal adenoma in order to detect those variables statistically associated to clinical failures of each technique. Forty-eight patients (27 males and 21 females) with hypophyseal adenoma were treated with microscopy (6 patients) or endoscopic removal (42 patients). Surgery was performed via endonasal trans-sphenoidal approach. Correlations between tumor dimensions (standard and macro-tumor) or surgical techniques (endoscopy vs. microscopic technique) vs. residual tumor, surgical complication (i.e. rhinoliquorrea) and persisting visual deficit, were evaluated. No statistical significance was detected among the studied variables. On the basis of reported data, both techniques are safe if the surgeon is well trained. Neuronavigation applied during endonasal trans-sphenoidal microscopic surgery can precisely define the localization and removal of lesions in the sella region with respect to the margins of important anatomical structures in the neighborhood, decreasing the rate of complications.

#### HAND-MADE CRANIAL VAULT RECONSTRUCTION: A CASE SERIES ANALYSIS

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The authors report the use of hand-made polymethylmethacrylate (PMMA) prosthesis for cranioplasties. None of several materials used to reconstruct skull defects is fully satisfactory, due to biological and physical properties. A retrospective study was performed in order to detect those variables statistically associated to clinical failures. PMMA cranioplasties have been implanted in 23 patients at the Neurosurgery Unit of the Arcispedale S. Anna of the University Hospital of Ferrara, Italy. . The causes of primary operation were 9 (39.1%) cerebral hemorrhages, 9 (39.1%) traumas and 5 (21.7%) tumors, respectively. Hypertension was a co-morbidity factor in 10 (43.5%) patients. Cranial vault reconstruction was performed after a mean period of 4 months and the mean post-operative follow up was 23 months. The variables analyzed were causes of craniotomy (hemorrhages, traumas, tumors and infections), co-morbidity factor (i.e. hypertension), sites (2 frontal, 4 fronto-temporal, 10 fronto-temporo-parietal, 4 occipito-parietal, 1 temporo-parietal and 2 temporo-occipito-parietal) and dimension of the defect (maximum diameter smaller than 9 cm,  $9 \le x \le 12$  cm, equal or greater than 12 cm). Each patient obtained an excellent aesthetic result. There was no reabsorption, rejections or spontaneous fractures related to the cranial vault reconstruction in the follow-up period. In two cases the reconstruction was removed: one brain tumor recurrence and one subdural hemorrhage. No variables had an impact on clinical outcome and thus was demonstrated that dimension is not a limiting factor in hand-made cranial reconstruction. A PMMA hand-made prosthesis is a valid and safe technique both aesthetically and in terms of absence of infections / rejections.

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#### **BIOMECHANICAL STRESS ANALYSIS OF BONE-IMPLANT INTERFACE**

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Over the last decade immediate load protocol has been revalued in the field of oral implantology with a view to achieve a simpler implantation protocol. This would lead to relevant advantages, such as a lower invasive impact of implantation and a shorter timing of treatment, with the patient regaining total masticatory functionality within the immediate post operative stage. In order to optimize the immediate load protocol and to foster implant osseointegration, the Italian Implantology School has developed soldering techniques by welding one or more stabilizing bars. Welding techniques allow obtaining a better primary stability in the early post-operatory period in comparison with non-supported implants, as micromovements are reduced and stress/strain distribution at bone-implant interface is more balanced. The present essay "Biomechanical stress analysis of bone-implant interface" is intended to study the distribution of stress/strain exerted by masticatory loads onto the peri-implant bone, with a view to decide whether the bar may be removed by completion of the healing process without relevant impact on bone strain. Secondly, it will be estimated whether the use of two bars undersized in diameter and symmetric to the implant can be compared with the application of one bar only. Finite Element analysis was performed. The results demonstrated that the use of a stiff definitive prosthesis (metal-porcelain) allows to remove the bar after 90 days' recovery, thus avoiding any cosmetic, hygienic and prosthetic contraindication.

#### **EXPRESSION OF HEAT SHOCK PROTEIN 27 IN ODONTOGENIC CYSTS**

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HSP27 belongs to the Heat shock protein (HSP) family, which exerts essential functions during the cell cycle under physiological conditions and prevents the stress-induced cellular damage. During the cell development, Hsp27 seem to play a crucial role at different stages, associated with cell proliferation, differentiation and death. Moreover, it seems involved in the balance between differentiation and apoptosis, also during the formation of calcified tissue. The aim of this study was to investigate the expression of HSP27 in odontogenic cysts and its possible biological role. Histological sections of epithelial odontogenic cysts (10 radicular cysts, 8 dentigerous cysts, 16 odontogenic keratocysts) were analyzed for HSP27 expression by immunohistochemistry. All odontogenic cysts were positive for HSP27, although with remarkable differences in the immunostaining pattern according to cyst types. Both proliferating epithelial cell rests and radicular cysts shared an overexpression of HSP27 with concomitant presence of local intraepithelial or subepithelial inflammatory cells. In odontogenic cysts epithelial cells immunolabelling was mainly cytoplasmatic. HSP27 expression may play several roles in the pathogenesis of periapical dental lesions including the induction of epithelial cell rests migration and the increased resistance both to necrosis and apoptosis.

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#### ADHESION MOLECULES IN EPITHELIAL ODONTOGENIC LESIONS

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Junctional complexes are important in maintaining epithelial cell polarity and cell-cell interactions and are known to be involved in tooth development; thus the purpose of the present study was to investigate the immunohistochemical profile of beta-catenin, gamma-catenin and P-cadherin in 41 epithelial odontogenic lesions (5 radicular cysts, 17 keratocystic odontogenic tumors, 3 dentigerous cysts, 6 calcifying odontogenic cysts, 9 ameloblastomas and one ameloblastic carcinoma). Positive immunostaining was obtained in all cystic lesions as well as in ameloblastomas for the three proteins. Weak staining of beta-catenin and gamma-catenin and absence of P-cadherin expression were observed in ameloblastic carcinoma. These results denote more cytodifferentiation of odontogenic epithelium in ameloblastoma and let us speculate that loss of P-cadherin expression may have a role in transition from benign (ameloblastoma) to malignant phenotype (ameloblastic carcinoma). Nuclear and cytoplasmic expressions of beta-catenin in half of examined calcifying odontogenic cysts and in ameloblastomas and ameloblastic carcinoma cases suggest deregulation of this protein and reinforce the role of Wnt-beta-catenin-TCF-Lef pathway in the pathogenesis and/or behavior of such lesions.

#### SIMPLICITY AND RELIABILITY OF INVISALIGN® SYSTEM

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Invisalign<sup>®</sup> system is an orthodontic treatment method in which removable, clear, semi-elastic polyurethane aligners are used to correct malocclusions. Invisalign<sup>®</sup> therapy corrects tooth malposition by a series of removable transparent polyurethane splints (aligners) that covering all the teeth plus the marginal aspects of the gingiva, which gradually move the teeth into an ideal position. Here a case series of patients treated with Invisalign<sup>®</sup> is performed to verify the efficiency, effectiveness, and stability of treatment. Twenty patients (15 females and 5 males, median age  $35.6 \pm 13.5$  years, min 11, max 59 years) affected by malocclusion were enrolled in this retrospective study. There were seven skeletal class 1, twelve skeletal class 2 and one skelatal class 3 malocclusion, 1 lateral cross-bite, 13 deep-bite and 4 open-bite. Lateral teleradiographic projections of the cranium were used. The cephalometric analysis was performed by using Dolphin system on pre-treatment and final control radiographies. Several variables related to teeth position were investigated. Pearson Chi Square was used to detect statistical differences among studied variables. In the present study we demonstrated that Invisalign<sup>®</sup> is an effectiveness tool to reach good clinical results since most of the studied variables (i.e. teeth position) have statistically significant differences between pre and post-treatment radiographies.

EUROPEAN JOURNAL OF INFLAMMATION

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#### LINGUAL ORTHODONTIC TECHNIQUE: A CASE SERIES ANALYSIS

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The lingual technique treatment offers the advantage of virtually invisible orthodontic therapy. It was originally introduced in the late 1970s. However, whereas initial results were promising they were followed by a phase of disenchantment as clinical and technical drawbacks were revealed: difficulties in bracket and arch application, disadvantages like increased time input due to more difficult bracket and archwire application and biomechanical problems such as reduced interbracket distance and the bowing effect were increasingly reported. The purposes of this retrospective study are to analyze a case series of patients treated with Lingual Orthodontic Treatment (LOT) and review the literature with regard to the efficiency, effectiveness, and stability of LOT. Three patients (2 females and 1 males, median age  $22 \pm 7$  years, min 15, max 29 years) affected by malocclusion were enrolled in this retrospective study. There were 2 skeletal class 1 and 1 skeletal class 2 malocclusion. Orthodontic treatment was performed by using 3M Incognito Appliance Customized Lingual System (3MUnitek Orthodontic Products, Monrovia, CA). Lateral teleradiographic projections of the cranium were used. The cephalometric analysis was performed by using Dolphin Imaging System McLaughlin Cephalometric Analysis. Several variables related to teeth position were investigated. Pearson Chi Square was used to detect statistical differences among studied variables. In the present study we demonstrated that LSOT using 3M Unitek Incognito Appliance System is effectiveness tool to reach good clinical results since the vast majority of the studied variables (i.e. teeth position) have statistically significant differences between pre and post-treatment control.

#### EFFECTIVENESS OF SELF-LIGATING ORTHODONTIC TREATMENT

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Self-ligating brackets (SLBs) was introduced by Stolzenberg in the early 1930s. Many SLBs systems have been patented since then, but few have been put on the market. Since SLBs have reduced friction and hence less force needed to produce tooth movement, they are proposed to have the potential advantages of producing more physiologically harmonious tooth movement. Here a case series of patients treated with SLBs is performed to verify the efficiency, effectiveness, and stability of treatment. Eighteen patients (8 females and 10 males, median age  $19 \pm$ 9.2 years, min 10, max 39 years) affected by malocclusion were enrolled in this retrospective study. There were 8 class 1, 5 class 2 and 5 class 3 malocclusion, 3 cross-bites and 2 open-bite. Orthodontic treatment was performed by using 3MUnitek Smart Clip Brackets. Lateral teleradiographic projections of the cranium were used. The cephalometric analysis was performed by using Dolphin Imaging System McLaughlin Cephalometric Analisys. Several variables related to teeth position were investigated. Pearson Chi Square was used to detect statistical differences among studied variables. In the present study we demonstrated that SLBs are effectiveness tools to reach good clinical results since all studied variables (i.e. teeth position) have statistically significant differences between pre and post-treatment control.

EUROPEAN JOURNAL OF INFLAMMATION

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# A RETROSPECTIVE STUDY ON PATIENTS TREATED WITH STANDARD ORTHODONTICS

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In standard orthodontic treatment (SOT), despite several innovations incorporated to the original "edgewise" system, principles and applications remain essentially the same of those introduced by Angle in 1928, when a rectangular wire was associated to a bracket with a rectangular slot, enabling three-dimensional movements. However, besides visibility of the appliance during orthodontic treatment, the labio-lingual inclination of maxillary and mandibular incisors and canines is considered by patients and orthodontists to be an important determinant in providing aesthetic outcome after orthodontic treatment. Furthermore, the correct inclination of the anterior teeth is essential in providing good occlusion in anterior and posterior regions, and is basically dependent on the correct expression of torque. Here a case series of patients treated with SOT is performed to verify the efficiency, effectiveness, and stability of treatment. Twenty-two patients (11 females and 11 males, median age 19.6 ± 9.5 years, min 10, max 39 years) affected by malocclusion were enrolled in this retrospective study. There were 5 skeletal class 1, 13 skeletal class 2 and 3 skeletal class 3 malocclusion, 1 cross-bites, 5 open-bite and 7 deep-bite. Orthodontic treatment was performed by using 3M Victory stainless-steel and Clarity ceramic brackets MBT prescription (Unitek Orthodontic Products, Monrovia, CA). Lateral teleradiographic projections of the cranium were used. The cephalometric analysis was performed by using Dolphin Imaging System McLaughlin Cephalometric Analysis. Several variables related to teeth position were investigated. Pearson Chi Square was used to detect statistical differences among studied variables. In the present study we demonstrated that SOT using 3M system is effectiveness tool to reach good clinical results since since the vast majority of the studied variables (i.e. teeth position) have statistically significant differences between pre and post-treatment control.

#### **OPEN FIXATION OF DISTAL RADIUS FRACTURES: OUR EXPERIENCE**

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Distal radius fractures are the most frequent lesions encountered during clinical practice. They have been treated with close reduction and plaster cast immobilization for long time. Actually, many authors emphasized the importance of anatomical reduction and surgical stabilization of the fracture. Internal fixation with plates is the gold standard for displaced extra-articular and intra-articular distal radial fractures. Stable internal fixation permits early motion of the wrist and of the surrounding joints and allows better functional rehabilitation of the wrist-hand complex. Between April 2006 and June 2010 we treated 77 distal radius fractures by open reduction and internal fixation using titanium low-profile angular stability volar plate. On the 15th day we started a gradual articular mobilization. The patients underwent follow-up at 1 and 3 months from the surgery and were examinated by radiographs. Functional outcomes were documented measuring the range of movement and the grip strength and by Gartland-Werley demerit point scoring system modified Sarmiento, the Disability of the Arm, Shoulder and Hand (DASH) and the Patient-Rated Wrist Evaluation (PRWE) questionnaire. Our results show a good recovery of range of movement and grip strength without pain. Open reduction and internal fixation with low profile angular stability volar plates represent an efficient and safe procedure to treat distal radius fractures. Stable reduction permits early mobilization strongly required for good functional outcomes.

EUROPEAN JOURNAL OF INFLAMMATION

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# A RETROSPECTIVE STUDY ON 758 HEAD AND NECK BASAL CELL CARCINOMAS

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This retrospective study was carry out to asses the clinical outcome a series of 758 histologically proven basal cell carcinomas (BCCs) treated at the Plastic Surgery Units, Ferrara University, Italy in the period between January 2005 and December 2010. There were 318 (42%) females and 440 (58%) males, age ranged from 36 to 103 years with a mean value of 76 years (standard deviation ± 12 years). There were 601 (79.3%) T1 (i.e. maximum diameter less than 2 cm) and 157 (20.7%) T2 (maximum diameter comprise between 2 and 4 cm). Surgical technique was a resection and immediate suturing in 753 (99.3%) cases whereas resection plus graft was used in 5 (0.7%) patients. None had positive neck nodes (N0) and neck dissection was not performed. Histologically positive margins were detected in 136 (17.9%) cases and a second surgery was needed. Chi square text 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 BCC is frequent in elderly and wide resection is mandatory since tumors are wider than clinical appearance shows.

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The approach to the concept of fat, and above all, its use is significatively changed over the years. Today it can be considered an optimal source to replace volume losses, above all because of his biocompatibility, for the easy way to withdraw it, and also, being an autologous tissue, for the reduction of rejection risk. Lipofilling can significantly improve the results of both conservative treatment after breast cancer (lumpectomy) and complete breast reconstruction with implants or flap. The purposes of this retrospective study have been the review and the analyses of patients submitted to mastectomy or lumpectomy for cancer and then reconstructed with latissimus dorsi flap or mammary prosthesis. We submitted them at Lipofilling technique in order to correct contour deformities or asymmetry. The study population was composed of 33 patients affected breast tumors and admitted to the Plastic Unit of S. Anna Hospital (Ferrara, Italy) between January 2006 and December 2010. Several variables were investigated: demographic, anatomic, type of resection, type of post-oncological reconstruction, surgeon performing the Coleman' techniques, fat donor site, number of filling. Pearson Chi Square was used to detect those variables more associated with the need of three filling procedures. None of the studied variables had a significatives statistic results, but they have shown to be in line with what said in literature. Even if Lipofilling is a technique in use from different time we can't understand which event is responsible of the necessity to perform more than one Lipofilling in order to obtain excellent results.

EUROPEAN JOURNAL OF INFLAMMATION

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#### **CLINICAL PARAMETERS IN T1 AND T2 LIP TUMORS**

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This retrospective study was carry out to asses the clinical outcome of T1 and T2 squamous cell carcinoma (SCC) of the lower lip and verify the impact of some clinical parameters on prognosis. Among a series of 121 tumors of the lips, 87 were located in the lower lip, 32 in the upper lip and 2 in the labial commissure. Ninety-five (78.5%) had resection followed by primay closure, 21 (17.4) had resection combined with local flap and 5 (4.1) were biopsies. Fifty-three patients with histological proven SCC of the lip. There were 39 T1 and 14 T2. Since no tumor had N and/or M the stage was the same. None had positive neck nodes (N0) and neck dissection was not performed. There were 22 grading 1 (i.e. G1), 20 G2 and 3 G3. Eight cases of grading were missed. Eight patients (5 SCC) had local relapsed which were treated with a second resection. Chi square text was used to detect the variables (i.e. grading, site, stage, type of surgery) statistically associated with the 5 cases of SCC which had local relapse. None of the studied variables was statistically correlated with local relapse. Radical tumor resection is a viable procedure for T1 and T2 SCC lower lip. In addition a second surgery on primary tumor location is possible.

## COMPARISON OF CONVENTIONAL DRILLS AND ULTRASONIC OSTEOTOMY FOR DENTAL IMPLANT SITE PREPARATION: A HISTOLOGICAL ANALYSIS IN BOVINE RIBS

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Ultrasonic surgery is a recently developed system for cutting bone with microvibrations. The aim of this study was to effectuate a histological comparison between conventional drills vs. ultrasonic surgery devices in implant bed preparation. Materials and methods: Ten bovine ribs were appropriately removed from soft tissues (connective, cartilage, fat etc)in order to obtain the underlying bone, and then stored for 1-2 days at 4°C. Each rib was individuated in two halves. On each half 5 implant sites were randomly prepared (10 sites per rib). A single cylindrical bur, 13 mm height and 2 mm width, (Bone System, Milan, Italy) at a speed of 400 rpm was used to prepare the implant sites of group (A) and 5 implant sites was prepare with the piezoelectric device (SURGYSONIC, ESACROM, IMOLA, ITALY) mounted with a diamond-coated cylindrical tip. After implant site preparation the ribs were stored immediately in 10% buffered formalin and processed to obtain thin ground sections. The specimens were processed using the Precise 1 Automated System (Assing, Rome, Italy). Results: osteotomy drill (group A) surfaces treated appeared not very different from those treated with piezoelectric device (group B); A higher magnification showed the presence of microcracks created on the interface. The latter appeared numerous for group A and had thickness and depth amounted to 20-120µ and 500-1000µ, respectively. While they were irrelevant or completely absent in group B. No statistical significant differences were found between the two groups on bone marrow (P=0,174). Conclusions: ultrasonic surgery device showed a higher performance in terms of accuracy and uniformity in quality of osteotomy cut, compared with conventional rotary instruments.

EUROPEAN JOURNAL OF INFLAMMATION

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# BIO-OSS® STIMULATES OSTEOBLASTS DIFFERENTIATION IN DENTAL PULP DERIVED STEM CELLS

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Bio-Oss<sup>®</sup> an anorganic bovine bone largely employed in maxillary surgery for regeneration procedures is identical to human bone from chemical and physical point of view and promotes osteogenesis. In order to get more inside how this biomaterial alters osteoblast gene expression to promote bone formation, the mRNA levels of bone related genes were compared in human osteoblasts and dental pulp stem cells, using real time RT-PCR. The obtained results demonstrated that Bio-Oss<sup>®</sup> enhance stem cells differentiation and deposition of matrix by the activation of osteoblast related genes SP7, FOSL1 and SPP1 and the disappearance of the mesenchymal stem cells marker, ENG.

# EFFECT OF ENGIPORE® TREATMENT ON ADIPOSE TISSUE-DERIVED STEM CELLS: AN VITRO STUDY

## G. BRUNELLI<sup>1</sup>, F. CARINCI<sup>2</sup>, A. PALMIERI<sup>2</sup>, A. GIRARDI<sup>3</sup>, I. ZOLLINO<sup>2</sup>, G. VAZZOLER<sup>1</sup>, F. MAGNABOSCO<sup>1</sup>, V. SOLLAZZO<sup>4</sup>

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Engipore<sup>®</sup> is a new bioactive material obtained using nanotechnologies, with architecture very similar to the natural bone. It is largely employed in bone regeneration in orthopedics and maxillofacial surgery because gradually resorbed by the osteoclast and replaced by new bone through osteoblastic activity. The molecular mechanism by which this material influences the behavior of osteoblast promoting proliferation and bone formation is poorly understood. To attempt this question we study the expression level of bone related genes in mesenchymal stem cells derived from adipose tissue and treated with Engipore<sup>®</sup> for 15 and 30 days. Gene expression profile, obtained wit real time RT-PCR, demonstrated that Engipore<sup>®</sup> influences the differentiation of adipose derived stem cells by the activation of osteoblast related genes SP7 and ALPL and the disappearance of the mesenchymal stem cells marker, ENG.

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# EFFECT OF ENGIPORE® TREATMENT ON ADIPOSE TISSUE-DERIVED STEM CELLS: AN VITRO STUDY

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## MEDPOR<sup>®</sup> STIMULATES ADIPOSE TISSUE-DERIVED STEM CELLS DIFFERENTIATION

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Medpor® is an alloplastic material largely employed for correcting cranial and facial defects. Implants make with this biomaterial are flexible, stable, and exhibit rapid soft-tissue growth. To better understand the molecular mechanism by which this biomaterial promote bone formation, the expression levels of bone related genes were analyzed in human stem cells isolated from adipose tissue and cultivated on Medpor®. Medpor® enhances proliferation, differentiation and deposition of matrix in stem cells by the activation of osteoblast related genes SP7, COL3A1 and ALPL.

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## OSTEOBLAST DIFFERENTIATION OF DENTAL PULP STEM CELLS AFTER PERIOGLASS® TREATMENT

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PerioGlas® (PG) is a silicate-based synthetic bone augmentation material used to fill periodontal defects, thanks its biocompatibility and osteoconductive properties. PG induces osteoblast proliferation and stem cells commitment thus it was hypotized that could be used as a template for the formation of bioengineered bone tissue. To study how PG can induce osteoblast differentiation in mesenchymal stem cells, the expression levels of bone related genes and mesenchymal stem cells marker were compared in normal osteoblasts and dental pulp stem cells, using real time RT-PCR. Gene differentially expressed between the two cells type were the transcriptional factor SP7, osteopontin (SPP1), collagen type 1α1 (COL1A1), alkaline phosphatase (ALPL) and FOS-like antigen 1 (FOSL1). The present study demonstrated that PG influences the behavior of stem cells in vitro by enhancing proliferation and osteoblast differentiation.

## RELATION BETWEEN INCLINATIONS OF CHEWING SURFACE OF UPPER TEETH RESPECT TO THE ORBITAL AXIS, TMJ PAINAND SEVERITY OF IDIOPATHIC SCOLIOSIS: A RETROSPECTIVE STUDY ON 120 PATIENTS

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The current study was performed to establish a correlation between inclination of chewing surface of upper teeth respect to the orbital axis, TMJ pain and severity of idiopathic scoliosis. The study population was composed of 120 patients affected by idiopathic scoliosis and admitted for orthodontic evaluation and treatment between January 2008 and December 2009. Several variables were investigated: demographic (age and gender), TMJ pain, anatomic (left and right cuspid and molar tooth classes) and functional (inclination of chewing surface of upper teeth respect to the orbital axis) variables. TMJ pain was statistically associated to the inclination of chewing surface of upper left central incisor and the second upper right pre-molar. By grouping moderate and mild scoliosis, a statistical significant correlation was detected between more severe scoliosis and the inclination of chewing surface of several upper teeth (i.e. central and lateral left incisors, right canine and first pre-molar) respect to the orbital axis. Patients affected by severe idiopathic scoliosis have a specific pattern of inclination of chewing surface of upper teeth respect to the orbital axis. Globally, there is a correlation between inclination of chewing surface of upper teeth and TMJ pain.

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## TRABECULAR TITANIUM INDUCES OSTEOBLASTIC BONE MARROW STEM CELLS DIFFERENTIATION

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Pure titanium and titanium alloys are materials widely used in orthopedics and dental surgery because of their mechanical properties, chemical stability and biocompatibility. Although excellent clinical results have been shown, traditional porous metals have several inherent limitations (low volumetric porosity, relatively high modulus of elasticity and availability as a coating only). With the aim of going over these limits, improving the potentiality of osteointegration, a new highly porous titanium biomaterial (Trabecular Titanium<sup>™</sup>, TT) has been developed. Because the molecular events due to TT and able to alter osteoblast activity to promote bone formation are poorly understood, expression of osteoblastic related genes in mesenchymal stem cells exposed to TT was investigated. The expression levels of bone related genes like RUNX2, SPP1, COL1A1, COL3A1, BGLAP, ALPL, and FOSL1) and mesenchymal stem cells marker (CD105) were analyzed, using real time Reverse Transcription-Polymerase Chain Reaction. TT causes induction of bone related genes osteopontin (SPP1), osteocalcin (BGLAP) alkaline phosphatase (ALPL) and indicating the differentiation effect of this biomaterial on mesenchymal stem cells. The obtained results can be relevant to better understand the molecular mechanism of bone regeneration and as a model for comparing other materials with similar clinical effects.