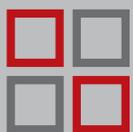


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CEPHALOMETRIC FLOATING NORMS FOR THE β ANGLE AND MMBP-WITS

Sara Bleta *, Giuseppe Perinetti *, Michele Ceschi *, Alessandro Scalia *, Luca Contardo *

* Orthodontic Postgraduate Program, Department of Medical, Surgical and Health Sciences; University of Trieste; Trieste, Italia

Corresponding Author:

Sara Bleta
Orthodontic Postgraduate Program,
Department of Medical, Surgical and Health Sciences;
University of Trieste;
Trieste, Italy
e-mail: bletasara@gmail.com

Abstract

Objective: The importance of an accurate measurement of sagittal jaw relationship, that is, skeletal class, is critical to orthodontic treatment planning. The ANB angle, β angle, and MMBP-Wits are among indices of sagittal jaw relationship. All of these indices are subjected to geometrical distortion, especially from facial divergence, making the use of floating (individualized) norms necessary. This study thus provides floating norms for the ANB angle and for the first time for the β angle and MMBP-Wits.

Methods: Lateral head films were obtained from 119 subjects (74 females and 45 males; mean age, 11.2 ± 1.5 years; range, 8.2–14.0 years) with well-balanced and pleasant profile and a near-ideal occlusion. Multiple regression models were employed to quantify the association of the ANB angle, β angle, and MMBP-Wits each with other four angular cephalometric parameters including SNA, SN/PP, SN/MP, and NSB angles.

Results: The β angle and MMBP-Wits were associated with the SNA and SN/MP angles; the ANB angle was associated with all the four other cephalometric variables. Floating norms for the β angle and MMBP-Wits (but not ANB angle) have been cross-tabulated according to the SNA angle (from 74° to 90°) and SN/MP angle (from 24° to 44°).

Conclusions: While the ANB angle is subjected to significantly more geometrical distortion as compared to the β angle and MMBP-Wits, floating norms may be used to individualize the reference values for both the β angle and MMBP-Wits.

MANAGEMENT OF PARTIALLY IMPACTED MANDIBULAR MOLARS USING TEMPORARY ANCHORAGE DEVICES

Gloria Borghetto ¹, Bruno Di Leonardo ¹, Riccardo Riatti ¹, Fabio Giuntoli ¹, Nicola Derton ¹, Rossano Mura ², Giuseppe Perinetti ¹, Luca Contardo ¹

¹ Orthodontic Postgraduate Program, Department of Medical, Surgical and Health Sciences; University of Trieste; Trieste, Italy

² Private practice in Arco, Trento (Italy)

Corresponding Author:

Gloria Borghetto
Orthodontic Postgraduate Program,
Department of Medical, Surgical and Health Sciences;
University of Trieste;
Trieste, Italy
e-mail: gloria.borghetto@gmail.com

Abstract

Partially impacted mandibular second permanent molars are a common clinical condition, with an incidence of .06-.3%. A number of uprighting techniques have been described, ranging from simple leveling archwires and open coil springs to more complex uprighting springs. Temporary anchorage devices (TADs) have simplified the handling of such difficult cases, minimizing adverse effects such as extrusion of the uprighted molar, intrusion of the anterior segment, and protraction of the teeth mesial to the tipped molar. Recent articles have proposed using miniscrew anchorage for correction of mesially tipped mandibular molars. This case series demonstrates the versatility and usefulness of TADs in uprighting impacted molars using various biomechanical systems.

THE BROKEN SMILE

Alberto Caprioglio *

* Division of Orthodontics, School of Medicine, University of Insubria, DSCM Varese, Italy

Corresponding Author:

Alberto Caprioglio,
Division of Orthodontics, School of Medicine, University of Insubria, DSCM,
Varese, Italy
e-mail: alberto.caprioglio@uninsubria.it

Abstract

One of the most important aspects to take into consideration when evaluating the outcome of treatment of traumatized tooth is the final periodontal health. Orthodontics has an important role to play in the treatment of patients with dental traumas when one considers the manifold consequences to dental development and various treatment options presently available.

The lecture will define the general guidelines to obtain a proper smile in a normal patient and how to adapt them to a patients with a dental trauma to the anterior teeth.

Treatment plan for patients with traumatized teeth involves a detailed evaluation of both the prognosis for the injured teeth and treatment of the malocclusion. A coordinated treatment plan, incorporating clinical and radiographic findings of healing and of complications must be established before orthodontic treatment begins. The periodontal conditions of the adjacent teeth will be used as possible reference for the traumatized area. Several cases will be shown in order to link theory to the orthodontic daily clinic. Learning Objectives:

- Overview the general criteria for a correct smile;
- Suggest strategies to preserve the periodontal status in a dental traumatized area;
- Drawn clinical guidelines to use in orthodontic daily practice.

RETENTION – A REVIEW

Almir Čustović *, Zlatko Ilić *, Slaven Laganin *, Vildana Džemidžić *

* Department of Orthodontics, School of Dental Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Corresponding Author:

Almir Čustović
Department of Orthodontics,
School of Dental Medicine,
University of Sarajevo,
Sarajevo, Bosnia and Herzegovina
e-mail: almir.custovic@gmail.com

Abstract

Aim: Evaluate the efficiency of different retention methods in orthodontics and the effects of length of retention stage on the outcome of treatment.

Materials and methods: The authors reviewed scientific papers related to retention in orthodontics. Google Scholar was used to searching for articles which were then used to produce a systematic review and analysis of available literature. Keyword method was used to search the database including stability, relapse, retention, and orthodontic retainer. The review included papers that were available in full and published in the period from 2008 to 2018 (the past ten years). The search was limited to papers in English.

Results: Long-term studies covering 10-year period following completed orthodontic treatment showed satisfactory results in 30 to 50% cases. However, after the review was extended to a period of 20 years, it was found that satisfactory and acceptable result significantly dropped to 10%. A large number of authors found that good intercuspation and good occlusive dental contact

are key to the stability of orthodontic treatment, although they do not guarantee satisfactory long-term results.

Conclusion: The most commonly used type of retention for the upper jaw is some mobile retainer, while the fixed retainer is used for the lower jaw. It is recommended that retainers should be used for at least 24 months.

COMPARISON OF ORAL HEALTH-RELATED QUALITY OF LIFE IN TREATED AND NON-TREATED ORTHODONTIC PATIENTS

Kenan Demirović ¹, Jasmin Habibović ², Enita Nakaš ³

¹ Private practice for Dentofacial Orthopedics and Orthodontics "Demirovic", Sarajevo, Bosnia and Herzegovina

² Public Health Institution Živinice, Bosnia and Herzegovina

³ Department of Orthodontics, School of Dental Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Corresponding Author:

Kenan Demirović
Private Practice for Dentofacial Orthopedics and
Orthodontics "Demirovic",
Sarajevo, Bosnia and Herzegovina
e-mail: kenandemirovic@hotmail.com

Abstract

Aim: Malocclusion as an oral disorder can cause a negative impact on individuals oral conditions, social interactions, and self-esteem. This study aimed to compare the oral health-related quality of life (OHQoL) of patients who had received fixed orthodontic treatment and patients who had not received fixed orthodontic treatment.

Materials and methods: Data were collected from 178 participants attended at a professional dental office (mean age 22.71 years) in two groups (experimental and control). Experimental group comprised of 90 subjects who were in the retention phase, after their orthodontic treatment. Control group comprised of 88 untreated subjects. Oral Health Impact Profile (OHIP-14) was used to assess the patient's oral health-related quality of life (OHQoL). The obtained results were statistically evaluated with the Mann-Whitney U test, t-test.

Results: The control group had significantly higher OHIP-14 scores than the experimental group ($p < 0.001$). Participants with treatment need reported a significantly higher negative impact on the overall OHRQoL score.

Conclusion: Subjects with no history of orthodontic treatment had more negative oral health-related quality (OHRQoL) than subjects who had completed orthodontic treatment. This study showed that oral health-related quality of life improves with the treatment of malocclusion.

SIDE EFFECTS OF ORTHODONTIC TREATMENT - A REVIEW

Vesna Elez¹, Lejla Redžepagić²

¹ Private praxis Ortodont, East Sarajevo, Bosna i Hercegovina,

² Department of Orthodontics, School of Dental Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Corresponding Author:

Vesna Elez

Private praxis Ortodont,

East Sarajevo,

Bosna i Hercegovina

e-mail: vesnance@hotmail.com

Abstract

Introduction: Orthodontic treatment aims to correct or alleviate orthodontic irregularity, whether its nature is dental or skeletal, to correct dental sequences, align occlusion, interrelate relation, correct chewing function, speech function, and facial aesthetics. As with any other medical intervention, orthodontic treatment has its benefits, as well as complications and side effects. Side effects can occur on the tooth, gingiva, alveolar bone. Among the most common side effects are Enamel Demineralization (White spot lesions), external apical root resorption, gingival inflammation, gingival hyperplasia, calcified dental plaque, advanced periodontal disease, loss of anchorage due to inadequately planned therapy, bite opening, a shift of the middle of the dental arrays.

Aim: This paper aimed to determine the possible side effects of orthodontic treatment through a systematic review of the literature.

Materials and methods: Internet search by which were reviewed and then analyzed articles published within the Google Scholar database and PubMed to 2018 on the topic of side effects that may arise as a consequence of orthodontic therapy. The inclusion factors were the availability of paper as a whole, papers published in English.

Conclusion: The study showed that the most common side effects of orthodontic treatment demineralization of enamel and root resorption of teeth. An Orthodontic is obliged to inform the patient with all the side effects that may accompany orthodontic treatment, but also to do the best to minimize possible side effect. The collaboration between the orthodontist and the patient is imperative for successful orthodontic treatment.

KNOWLEDGE AND ATTITUDE OF GENERAL PRACTICE DENTISTS AND DENTAL SPECIALISTS ABOUT ORTHODONTIC TREATMENT

Irena Gagula *, Jasmina Kozadra *, Vildana Džemidžić *

* Department of Orthodontics, School of Dental Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Corresponding Author:

Irena Gagula

Department of Orthodontics,

School of Dental Medicine,

University of Sarajevo,

Sarajevo, Bosnia and Herzegovina

e-mail: irenagagula@gmail.com

Abstract

Introduction: General health is in the direct connection and influence of oral health therefore requires high level of attention by the common people as much as from professional medical workers, foremost dentists. Awareness and knowledge among dental workers about orthodontic anomalies, most commonly malocclusions, can significantly contribute to timely and appropriate treatment among a population of children as well as adults.

Aim: The objective of this study was to determine a level of knowledge and evaluate attitude about orthodontic treatment among general practice dentists and different dental specialists except for orthodontists.

Material and methods: The study was carried out using specially created questionnaires containing 8 questions for dentists. The questions related to the knowledge and attitude of the dentist about orthodontic treatment. The questionnaires were filled by 142 dentists, out of which 72 were general practice dentists and 70 different dental specialists, except orthodontics. The survey was conducted in a regional context as the respondents were from Bosnia and Herzegovina, Croatia, Montenegro, and Serbia.

Results: The results of this study conducted among 142 respondents indicate that dental specialists hold a higher level of knowledge on orthodontic treatment is compared to general practice dentists.

Conclusion: To improve general practice dentists knowledge based on orthodontic anomalies, clinical practice along continuous education programmes on orthodontic treatment is suggested.

UNDERSTANDING MASTICATORY FUNCTION IN UNILATERAL CROSSBITES: REASONS FOR EARLY TREATMENT WITH FUNCTION GENERATING BITE

Maria Grazia Piancino *

* University of Turin-Italy

Corresponding Author:

Maria Grazia Piancino

University of Turin-Italy

e-mail: mpianci@gmail.com

Abstract

Crossbite is a very early malocclusion that more than any other else severely alters the masticatory function establishing asymmetrical patterns between sides. It is a problem often seen in orthodontic practice, and properly understanding chewing patterns will lead to the most effective diagnosis and treatment program. Mastication is one of the most important functional activity of the stomatognathic system. It is a rhythmic movement characterized by a diversity of jaw patterns, established by the integration between the peripheral inputs, the pattern generator in the brainstem and the cortical activity. Recently, it has been observed that mastication is involved in memory and cognitive processes and that a physiological masticatory function is important for the development and preservation of cognitive activity both during growing and aging. Drawing on the research and available literature, an interesting look at chewing cycles and their role in the functional treatment of unilateral crossbite will be presented. The physiology of mastication-the chewing pattern and neuromuscular control- will be compared to the alteration related to the unilateral posterior crossbite malocclusion, describing both the kinematic and muscular research results. The early correction with Function Generating Bite will be addressed showing the occlusal correction and the restoration of a symmetrical masticatory function between sides and during time. This is the real aim of the early orthodontic therapy that requires non-traumatic, physiological treatments. In fact, it is of clinical relevance, for successful orthodontic therapy, to consider not only the repositioning of teeth within the dental arches but also the effects of therapy on function and on growth.

IMPACT OF DIFFERENT FACTORS ON SHEAR BOND STRENGTH OF ORTHODONTIC BRACKETS BONDED TO THE TOOTH - A REVIEW

Jasmin Habibović¹, Edina Habibović², Kenan Demirović³, Alisa Tiro⁴

¹ Public Health Institution Živinice, Bosnia and Herzegovina

² Public Health Institution Gračanica, Bosnia and Herzegovina

³ Private Practice for Dentofacial Orthopedics and Orthodontics "Demirović", Sarajevo, Bosnia and Herzegovina,

⁴ Department of Orthodontics, School of Dental Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Corresponding Author:

Jasmin Habibović
Public Health Institution Živinice,
Alije Izetbegovića 17,
Živinice, Bosnia and Herzegovina
e-mail: habibi_ja@yahoo.com

Abstract

Aim: The aim of this paper is to review different factors affecting the shear bond strength of orthodontic brackets to the tooth, using recently published scientific data. In orthodontics, it is a great challenge to ensure the shear bond strength of orthodontic brackets so as to achieve full effect and prevent unnecessary prolongation of the therapy. Different factors can affect the shear bond strength of orthodontic brackets, from the adhesive protocol to different materials which will be presented.

Material and methods: A Complex search of different databases in July and August 2018 included the default keywords: shear bond strength, orthodontic brackets and adhesives. The search included randomized controlled or prospective clinical studies with patients of any age undergoing fixed orthodontic treatment and a control group. The bibliographies of the selected articles were searched to determine all relevant publications that dealt with the topic.

Results: The articles found were eligible for inclusion in the research: they met the given keywords, they were published from 1999 to 2018 and presented, clinical studies with patients of any age undergoing fixed orthodontic treatment. A total of 30 articles met all the inclusion criteria. The majority of articles offered similar conclusions.

Conclusion: Most of the research data available recommends a protocol that showed the best effects. The protocol includes etching by 37% orthophosphorous acid for 30 seconds, rinsing with water for 30 seconds and then air drying. The material that provides the bond strength of orthodontic brackets and shows the best properties are composite resins.

REGENERATIVE THERAPY IN ORTHODONTICS – A REVIEW

Azra Jelešković *, Amila Čolakhodžić Haskić *, Arma Muharemović *, Azra Begeta Efović *

* Department of Orthodontics, School of Dental Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Corresponding Author:

Azra Jelešković
Department of Orthodontics,
School of Dental Medicine,
University of Sarajevo,
Sarajevo, Bosnia and Herzegovina
e-mail: azra.jeleskovic@gmail.com

Abstract

Introduction: Regenerative dentistry, is a new field of research which uses tissues' self-healing and regenerative potential. Use of bone and bone substitutes, membranes, growth factors, stem cells, platelet concentrates and combining the above mentioned enables more successful dental treatment.

Aim: This review aims to get to know the wider orthodontics public with the possibilities of regenerative therapy in orthodontics.

Material and methods: the research was done using search engines PubMed and Google Scholar. The keywords were: regenerative therapy, stem cells, orthodontics, PRF. Selected articles are written between 2005 and 2018.

Conclusion: combined orthodontic and regenerative therapy can resolve complex clinical problems and enhance bone formation. New technologies in dentistry, as well as the more demanding orthodontic patients, have brought about an application of regenerative methods in orthodontics. This article is a short review of the use of regenerative methods, mostly in the form of PRF and stem cells, in orthodontic treatment.

MAXILLARY IMPACTED CANINES: INTERCEPTIVE THERAPY IN MIXED DENTITION

Sunčana Kišić-Merlo *

* Dental Clinic Nika, Zadar, Croatia

Corresponding Author:

Sunčana Kišić-Merlo
Dental Clinic Nika,
Zadar, Croatia
e-mail: suncana.merlo@gmail.com

Abstract

The impacted canines are always a challenge for an orthodontist and they need interdisciplinary cooperation with an oral surgeon. The prevalence of maxillary impacted canines (MIC) according to the literature is between 2.4% and 8.8 % in radiographic studies. Definite tendency toward unilateral impaction was found. According to the author's study, most of them are unilaterally impacted (78%), 54% on the right and 24% on the left side of maxilla. Although they are not a common occurrence, bilaterally impacted canines were detected in 22% percent of patients with MIC (the same study). Transmigrated or transposed maxillary canines are extremely rare according to opinion of other authors. In our clinic we have 7 orthodontically treated cases which is lower than 0.1% of all patients in therapy. A very important diagnostic tool for all impactions is undoubtedly CBCT (Cone Beam Computed Tomography) which is standard for planning orthodontic biomechanics and surgery. The causes of the tooth impaction are crowding, trauma, root dilacerations, odontoma, cyst, supernumerary tooth or a mesiodens. However, the most common reason for MIC is crowding in the mixed dentition. It is important to mention that heredity has a great role in the etiology of MIC. The purpose of this lecture is the following question: can we prevent canine impaction and how can we educate general practitioners to recognize risk of MIC in our young patients.

THE BRIGHT SIDE OF ORTHODONTICS

Anne Marie Kuijpers-Jagtman *

* Radboud University, Department of Orthodontics and Craniofacial Biology, Nijmegen, The Netherlands

Corresponding Author:

Anne Marie Kuijpers-Jagtman
Radboud University,
Department of Orthodontics and
Craniofacial Biology
Nijmegen, The Netherlands
e-mail: AnneMarie.Kuijpers-Jagtman@radboudumc.nl

Abstract

Orthodontists want to make their patients happy and they are rightly proud of the results they can achieve for their patients. Each orthodontist knows that after treatment we face a new challenge and the question arises 'will it be stable' and 'how to retain the result?' Post-treatment changes are a fact of life for orthodontists. Patients, however, quite often have other expectations, as they expect stability for many years, if not for life, after investing so much time, effort, and money in their orthodontic treatment. So, we need to know what we are able to achieve with orthodontic treatment. The effects of orthodontic treatment on the occlusion, facial appearance, expectations and psychological status of the patient and the factors that have an effect on the long-term stability will be explored.

EARLY TREATMENT OF CLASS III MALOCCLUSION WITH THE FRÄNKEL APPLIANCE

Mojca Lajh *

* Medical Health Centre Maribor Department of Orthodontics Slovenia

Corresponding Author:

Mojca Lajh
Medical Health Centre Maribor
Department of Orthodontics
Maribor, Slovenia
e-mail: mojca.lajh@triera.net

Abstract

Aim: This presentation aims to evaluate the effectiveness of treatment with Fränkel functional appliance on growing child with Class III malocclusion.

Case report: An 8-year old girl with Class III malocclusion and facial appearance. Functional diagnosis revealed incorrect breathing through the mouth, visceral type of swallowing pattern and

incorrect tongue posture. Study cast analysis showed a reverse overjet (-2 mm) and a crossbite. The lateral cephalogram indicated a retrognathic maxilla, Class III skeletal relationship and a vertical growth pattern. The treatment plan was to start the orthodontic treatment with a Fränkel III functional appliance.

Results: After 12 months of treatment with the Fränkel III appliance and very good cooperation significant improvement in the occlusion was obtained. Class I occlusion with positive overjet was achieved. Nasal breathing, proper tongue posture and somatic swallowing pattern were established. The facial appearance greatly improved.

Conclusion: Early treatment of Class III malocclusion with the Fränkel appliance can successfully modify the growth and development of the orofacial system, as well as improves the irregular orofacial functions. The dynamic balance in the oral cavity after treatment with the functional Fränkel III appliance can be established.

HAPPY PATIENT? WHAT MORE DO WE NEED TO KNOW

Vjera Matković Ferreri *

* Psychiatric Clinic, University Hospital of Rijeka, Rijeka, Croatia

Corresponding Author:

Vjera Matković Ferreri

Psychiatric Clinic,

University Hospital of Rijeka,

Rijeka, Croatia

e-mail: vjramatkovic@yahoo.com

Abstract

Much of the time in day by day practice we experienced the lack of information about supposed troublesome patients. Help-rejecting complainer (HRC), was described by J. Frank in 1952. HRC presents numerous, often ill-defined and insurmountable complaints. She/he stubbornly refuses offered solutions, frequently sabotages therapeutic process and changes therapists. She/he is even proud of the degree of difficulty of his/ her problem(s). The described pattern of relationships is usually not established just with the therapist, but with the entire environment. The physicians view these patients as demanding, frustrating, they often elicit negative emotions, thus creating a vicious circle. The difficult patient can represent a significant clinical challenge, and the therapeutic process often fails. This type of patients is encountered in every medical specialty and often remains unrecognized. Other than mutual frustration, therapeutic failure may also have legal consequences. Consequently, it is imperative not exclusively to perceive, comprehend and name the sentiments of the patient yet even specialist's very own emotions, states of mind, and impediments, to give some opportunity to a positive result of the therapeutic procedure.

ORTHODONTICS - ORTHOGNATHIC SURGERY TREATMENT PATIENTS WITH CLEFT LIP AND PALATE

Marija Magdalenčić-Meštrović *

* Dental Clinic Zagreb, Orthodontic department

Corresponding Author:

Marija Magdalenčić-Meštrović

Dental Clinic Zagreb,

Orthodontic department

Perkovceva, Zagreb

Croatia

e-mail: marija.mestrovic@post.t-com.hr

Abstract

Orofacial clefts are the most common facial malformations (cleft incidence of 1.71 per 1000 in Croatia) and therapy of that malformation is longitudinal, complex and includes multidisciplinary approach of different specialists.

Where possible, the orofacial cleft therapy is performed by orthodontic devices, along with the correction of dental medicine specialist after completion of the therapy.

In some patients with cleft lip and palate after active orthodontic treatment orthognathic surgery to bring the deficient maxilla downward and forward may be a necessary last stage in treatment. After that some patients needed fixed prosthodontics to replace missing teeth.

ORTHODONTIC TREATMENT AND TMD – A REVIEW

Alma Mušanović ¹, Džejan Močević ², Azra Jelešković ³, Lejla Redžepagić-Vražalica ³

¹ The Health Centre of Fojnica, Fojnica, Bosnia and Herzegovina,

² Private praxis „Ministry of smile“, Sarajevo, Bosna i Hercegovina,

³ Department of Orthodontics, School of Dental Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Corresponding Author:

Alma Mušanović

J.U. Dom zdravlja Fojnica,

Bolnička 8,

71270 Fojnica,

Bosna i Hercegovina

e-mail: almamaslan@gmail.com

Abstract

Introduction: The temporomandibular disorders (TMDs), according to the American Academy of Orofacial Pain, is a

collective term for a group of musculoskeletal and neuromuscular conditions which include several clinical signs and symptoms involving the muscles of mastication, TMJ and associated structures. In the late 1980's the number of studies examining the impact of malocclusions and orthodontic treatment on signs and symptoms of TMDs increased. Considering the available literature, it can be concluded that there are contradictory opinions on the etiology of TMDs.

Aim: This study aimed to determine whether there is a connection between various orthodontic treatment techniques and signs and symptoms of TMDs through a systematic review of the literature.

Materials and methods: Articles on the impact of malocclusions and orthodontic treatment on the occurrence of signs and symptoms of TMDs, published in the last 15 years, were reviewed and analyzed within the Google Scholar database and PubMed.

Conclusion: The study showed that there is no significant association between orthodontic treatment and the development of TMDs.

AESTHETIC & CLASS III TREATMENT

Letizia Perillo *

* Dean of the Dental School at the University of Campania Luigi Vanvitelli, Naples

Corresponding Author:

Letizia Perillo
University of Campania Luigi Vanvitelli,
Naples, Italy
e-mail: letizia.perillo@gmail.com

Abstract

Dento-skeletal Class III malocclusions in growing children remain one of the most challenging problems in orthodontics.

This disharmony is characterized by negative overjet and concave profile so that aesthetic is one of the main problem of these patients.

However, early treatment in growing patients is widely discussed in the literature mainly due to the uncertainty of stable long-term results.

Nevertheless, several therapeutic alternatives has been developed to treat Class III dento-skeletal disharmony at an early stage

This clinical presentation will focus on the SEC III protocol, composed by Splints, class III Elastics, and Chincup.

The efficacy and benefits of early treatment in developing Class III malocclusion will be analyzed and the importance of the aesthetic outcome will be discussed.

EXPLOITING GROWTH INDICATORS TO ENHANCE EFFICIENCY OF TREATMENT OF SKELETAL CLASS II AND CLASS III MALOCCLUSIONS IN GROWING PATIENTS

Giuseppe Perinetti *

* Private practice, Nocciano, Italy

Corresponding Author:

Giuseppe Perinetti
Private practice
Nocciano (PE), Italy
e-mail: G.Perinetti@yahoo.com

Abstract

Functional and orthopaedic treatment for skeletal Class II and Class III malocclusions in growing subjects carries relevant aesthetic implications. However, efficient treatments require to be performed at optimal stages of skeletal maturation assessed by the use of different growth indicators. Currently, controversies are arising regarding the reliability of the most commonly used radiographical growth indicators. A critical reappraisal of available literature along with recent investigations are uncovering the possibilities and limitations of the different indicators. Although not all growth indicators proved to be fully reliable and, in spite of the limitation of present evidence, the use of these indicators is still recommended. A special emphasis will be given to the 3rd finger middle phalanx maturation (MPM) method along with corresponding clinical cases.

HOW THE DIGITAL SMILE DESIGN HAS CHANGED THE ORTHODONTIC TREATMENT PLANNING AND THE BRACKET POSITIONING

Riccardo Riatti *

* University of Trieste, Italy

Corresponding Author:

Riccardo Riatti
University of Trieste,
Trieste, Italy
e-mail: riccardoriatti@gmail.com

Abstract

In recent years, DSD (Digital Smile Design) has been used widely in the treatment planning process by prosthodontists and it can also be a useful tool for orthodontists.

The author incorporated the DSD into the orthodontic diagnostic process and into the indirect bracket positioning system in order to obtain a better aesthetic treatment result. New concepts in bracket positioning heights for smile arc protection will also be presented.

BIOLOGICAL EFFECT OF CORROSION OF NICKEL-TITANIUM ORTHODONTIC ARCHWIRES – CYTOTOXICITY ON CELLS OF THE GASTROINTESTINAL TRACT

Marijana Rincic Mlinaric¹, Ksenija Durgo², Drazenka Komes²,
Visnja Katic³, Stjepan Spalj³

¹ University of Zagreb, School of Dental Medicine, 10000 Zagreb, Croatia,

² University of Zagreb, Faculty of Food Technology and Biotechnology, 10000 Zagreb, Croatia,

³ University of Rijeka, Faculty of Medicine, Department of Orthodontics, 51000 Rijeka, Croatia

Corresponding Author:

Stjepan Špalj

University of Rijeka, Faculty of Medicine,

Department of Orthodontics,

51000 Rijeka, Croatia

e-mail: stjepan.spalj@medri.uniri.hr

Abstract

Aim: The research aimed to explore the effect of the products of corrosion of nickel-titanium (NiTi) orthodontic alloys in saliva on human cells of the gastrointestinal tract.

Material and methods: Eighteen samples of NiTi archwires (0.020x0.020") were immersed in artificial saliva with pH 4.8 at the temperature of 37°C. It was a simulation of the oral cavity during orthodontic treatment with fixed appliances in a patient with poor oral hygiene and high plaque accumulation in bracket slots. The dynamics of nickel and titanium ions release were recorded 3rd, 7th and 14th day by inductively coupled plasma-mass spectrometry. Biological effect of Ni and Ti ions was explored on cell lines of human tongue CAL 27, liver HEP G2 and colon Caco-2 after exposure of 24, 48 and 72 hours to a real concentration of corrosion products, 5x concentration, and dilutions of 0.5x and 0.1x. Experiments were performed in two replicates and repeated twice.

Results: Concentration of 30.4 µg/L Ni and 17.3 µg/L Ti in saliva (together 42.3 µg/L) were the maximum values found during 14 days of exposition of NiTi to saliva which did not induce the cytotoxic effect. Increase in concentration of Ni and Ti tends to increase cytotoxicity, Ti more than Ni. A significant decrease in viability of all cell lines, with large effect size, is present when concentration both metals are at least 162 µg/L. It is characterized as moderate to strong cytotoxicity and comprises of a combination of 75.5 µg/L Ni and 86.5 µg/L Ti or 128 µg/L Ni and 44.9 µg/L Ti ($p < 0.001$; $\eta^2 = 0.853-0.971$). The lowest concentrations that induce cytotoxicity are 75.5 µg/L Ni and 44.9 µg/L Ti, which is 2.5x higher than concentration released during two weeks. A very low concentration of Ni and Ti can even stimulate cellular growth.

Conclusion: Corrosion of NiTi archwires in low pH saliva do not induce major cytotoxic effect and would not have a clinically important impact.

THE LATEST TRENDS OF ESTETIC MEDICINE

Željko Rotim *

* President of Croatian Society for Aesthetics of the Face CMA (HDEL)

Corresponding Author:

Željko Rotim

Croatian Society for Aesthetics of the Face

e-mail: zeljko.rotim@zg.t-com.hr

Abstract

The lecture will show the latest trends in modern anti-aging esthetic medicine with particular emphasis on non-surgical and minimally invasive methods of esthetic medicine which can be performed in the dental medicine office.

REVEALING HIDDEN DETAILS OF THE FACE

Ingrid Różyło-Kalinowska *

* Department of Dentomaxillofacial Radiology of the Medical University of Lublin, Poland

Corresponding Author:

Ingrid Różyło-Kalinowska

Department of Dentomaxillofacial Radiology
of the Medical University of Lublin, Poland

e-mail: irk@eadmfr.eu

Abstract

Discovery of X-radiation over 120 years ago offered a possibility of demonstrating hidden details of a human body without need of disrupting integrity of skin, which is crucial especially when face is concerned. The anatomy of the human face is complex therefore imaging diagnostics is challenging. In the first centennial X-rays were used mostly to present two-dimensional images of three-dimensional objects, but recently three-dimensional imaging techniques have become more and more available in dentistry, including orthodontics.

The aim of the lecture is to present two-dimensional and three-dimensional imaging techniques in orthodontic diagnostics. Differences between panoramic radiography and Cone-Beam Computed Tomography (CBCT) will be discussed, especially concerning technique of image acquisition, anatomy and image interpretation. Pitfalls in diagnostics will be highlighted and clues on how to avoid them in clinical practice presented.

COMPARISON OF CLINICAL AND OBJECTIVE FACIAL SYMMETRY ASSESSMENT

Ivana Rupić¹, Enita Nakaš², Tomislav Lauč^{1,3,4}

¹ Dental Clinic Apolonija, Zagreb, Croatia ,

² Department of Orthodontics, School of Dental Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

³ Study of Anthropology, Faculty of Philosophy, University of Zagreb, Zagreb, Croatia

⁴ Department of Dental Medicine, Faculty of Medicine, Josip Juraj Strossmayer, University of Osijek, Osijek, Croatia

Corresponding Author:

Ivana Rupić
Dental Clinic Apolonija,
Varsavska 10,
10 000 Zagreb, Croatia
e-mail: ivana.rupic@gmail.com

Abstract

Introduction: Facial symmetry assessment is part of the standard orthodontic diagnostic protocol. In general, symmetry is associated with higher genetic stability and is an important factor in assessing facial attractiveness. The symmetry evaluation depends on its expression, of an evaluator and of the thickness and the distribution of soft facial tissues that can mask the possible asymmetry.

Aim: The purpose of this study was to make a preliminary comparison of clinical and objective facial symmetry assessment using facial image analysis.

Material and methods: As part of the first orthodontic examination on the Department of Orthodontics at the Faculty of Dentistry with clinics, University of Sarajevo, 100 patients were examined. All patients passed the same anamnestic and orthodontic diagnostic protocol, and the dental stage of development was in the period of the second stage of mixed dentition. The children faces were photographed in frontal projection without expression, in minimal facial muscular tonus and with the mutual touch of the upper and lower lips. Clinical evaluation of symmetry of faces is recorded as a symmetric or asymmetric face. Of the total sample randomly were selected 40 participants, which were clinically evaluated as symmetrical of the same doctor. Objective estimation of symmetry was performed using bilateral anthropometric points zygion (zy), endocanthion (en), exocanthion (ex), pupil (p), alare (al) gonion (go) and chelion (ch). In software Image J distances between the points were calculated. The symmetry estimation was done by a method that does not use the reference lines but measures the difference between the points in the middle of the distance between the two respective points. Thus, the amounts of facial asymmetry (FA) and central facial asymmetry (CFA) were obtained.

Results and Conclusion: Based on this research we can conclude that horizontal symmetry can be estimated very precisely just by examination of the face. Moreover, that most of the underlying severe malocclusion can be cover by soft tissue of the face. This leads us to the conclusion that more profound research should be done to investigate facial attractiveness and underlying malocclusion and IOTN index.

COMPLICATION OF ORTHODONTIC TREATMENT - A REVIEW

Alma Trako *, Alisa Tiro *

* Department of Orthodontics, School of Dental Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Corresponding Author:

Alma Trako
Department of Orthodontics,
School of Dental Medicine,
University of Sarajevo,
Sarajevo, Bosnia and Herzegovina
e-mail: almatrako@hotmail.com

Abstract

Introduction: Orthodontics is a branch of dentistry for orthodontics implies a thorough knowledge of biomechanics, tool materials, appliances, application of new diagnostic tools, planning of therapy, establishment of function and occlusion and aesthetic results of the patient. Like any medical intervention, orthodontics also has been caused by multiple factors that cause complications, factors like specific characteristics of the patient, orthodontic action, and the orthodontic relationship with the patient or orthodontic relationship and the patient's parent. It is very important for an objective assessment of the need for orthodontic treatment for each patient and the positive and negative consequences of therapy for the given case.

Aim: Work aims to identify complications of orthodontic therapy, which can affect not only the course of therapy but also the outcome of the therapy.

Materials and methods: it has been used the data from the mentioned articles, studies, scientific-research papers, with the restriction upon of publication date (beginning with 2002), cross-section studies, retrospective studies, clinical studies, downloaded from the Internet (journal on web, science direct, Pubmed, sci_hub, etc.)

Concluding remarks: When we were reviewing articles, research papers, literature, there are numerous complications of orthodontic therapies that need to be timely recognized and prevented and find ways to reduce and meet the patient with the same confirmation of compliance with the therapy.

KINETICS OF MONOMER AND BISPHENOL - A RELEASE FROM AN ORTHODONTIC ADHESIVE

Magda Trinajstić Zrinski¹, Dalibor Broznić², Višnja Katić¹, Stjepan Špalj¹

¹ University of Rijeka, Faculty of Medicine; Department of Orthodontics, Kresimirova 40, 51000 Rijeka, Croatia,

² University of Rijeka, Faculty of Medicine; Department of Chemistry and Biochemistry, Braće Branchetta 20, 51000 Rijeka, Croatia

Corresponding Author:

Magda Trinajstić Zrinski
University of Rijeka, Faculty of Medicine;
Department of Orthodontics,
Kresimirova 40,
51000 Rijeka, Croatia
e-mail: magda.zrinski@medri.uniri.hr

Abstract

Aim: To evaluate the kinetics of Bis-GMA, TEGDMA and bisphenol-A (BPA) release from an orthodontic adhesive system.

Material and methods: Ten samples of Transbond XT adhesive (3M Unitek, USA) combined with the Transbond XT primer (3M Unitek, USA) were produced under a metallic bracket in a simulation of the clinical procedure and illuminated for 20 seconds. The samples were placed in a glass tube containing 6 mL of distilled water and stored in a thermal chamber at 37° C. After 6 hours, the solution was removed and stored, while 6 mL of fresh distilled water was added to the tube. This process was repeated 12, 24, 36 hours, as well as 2, 3, 4, 7, 9, 11, 14, 21 and 28 days after polymerisation. The solutions were analysed for the presence of Bis-GMA, TEGDMA and BPA using high-performance liquid chromatography on a Thermo Separation Products (Spectra System, USA) system equipped with a UV/VIS detector. The experiment was repeated 6 times.

Results: TEGDMA showed the highest release rate, peaking at 1337.01 µg/g of adhesive. Its release increased significantly during the first 4 days ($p \leq 0.043$), thus reaching a plateau. The release of Bis-GMA increased significantly between all consecutive testing times ($p \leq 0.03$), with a maximum of 132.44 µg/g of adhesive on the 28th day. Similarly, a significant increase in the release of BPA was found throughout the testing period ($p < 0.001$) and its maximal release was 283.58 µg/g of adhesive.

Conclusion: TEGDMA is released at a high rate during the early days after polymerization of the Transbond XT adhesive system. Bis-GMA and BPA have a lower and slower release rate that is, however, likely to be continued in the long term.

CONTEMPORARY TECHNIQUES FOR ACCELERATED TOOTH MOVEMENTS IN ORTHODONTICS

Mirjam Uravić Crljenica *

* Ord.dent.med.Mirjam Uravić Crljenica

Corresponding Author:

Mirjam Uravić Crljenica
e-mail: mirjam.uravic@gmail.com

Abstract

Aim: This literature review aimed to analyze and compare the main clinically used non-surgical and surgical methods of shortening the duration of orthodontic therapy.

Material and methods: Newer scientific papers in English are required in the MEDLINE MEDLINE database via PubMed (January 2006 to December 2016).

Results: The main reason why orthodontic therapy should be as short as possible is a potential worsening of oral health. The day is a brief historical review of the first methods for achieving a clinically faster orthodontic shift. Most non-surgical techniques include bone cell activation, gene therapy, use of local biomodulators, bone stimulation with Accedent®, direct current use and low-power laser use: Also, the Insignia® system is used to individualize orthodontic treatment, which can reduce working time and number of patient visits. Surgical techniques used to accelerate therapy include osteotomy, corticotomy, piezo-excitation, dentoalveolar distraction and periodontally accelerated osteogenic orthodontics (PAOO). The indications, contraindications, advantages and disadvantages of the above method are shown. In addition, a clinical example of the PAOO process is described. Dentoalveolar distraction can be a promising technique in accelerating tooth movements. However, currently, there is no scientific evidence for this. Although invasive, corticotomy showed less complications during recovery compared to osteotomy. In PAOO technique, the piezoelectric knife is the instrument of choice. Today, micro cuts are made without losing the lobe, which potentially results in better results. A method that can help prevent infection and reduce pain is the intraoperative use of fibrin-rich in platelets.

Conclusion: PAOO technique is the most cost-effective contemporary method for reducing the time of orthodontic shifting of teeth.

FACIAL AGING IS SEX-SPECIFIC

Sonja Windhager¹, Philipp Mitteroecker¹, Ivana Rupić², Tomislav Lauc^{2,3,4,5}, Ozren Poljšek^{6,7}, Katrin Schaefer⁸

¹ Dept. Theoretical Biology, Univ. Vienna, Austria

² Dental Clinic Apolonija, Zagreb, Croatia

³ Study Anthropology, Faculty Social Sciences & Humanities, Univ. Zagreb, Croatia

⁴ Faculty Dental Medicine & Health, Univ. Osijek, Croatia

⁵ Dept. Orthodontics, Faculty Dentistry, Univ. Osijek, Croatia

⁶ Dept. Public Health, School Of Medicine, Univ. Split, Croatia

⁷ Gen-Info Ltd, Zagreb, Croatia

⁸ Dept. Evolutionary Anthropology, Univ. Vienna, Austria

Corresponding Author:

Sonja Windhager

Dept. Theoretical Biology,

University Of Vienna,

Vienna, Austria

e-mail: sonja.windhager@univie.ac.at

Abstract

Human facial aging represents the culmination of age-related changes in the skeleton, soft tissue, and skin of the face. More specifically, its manifestations reflect combined effects of progressive bone resorption, decreased tissue elasticity, gravity, facial volume loss, and redistribution of fat. Thorough quantifications of facial aging in living humans, however, are scarce. Based on the geometric morphometric toolkit, we present an analytical pathway of high spatial and temporal resolution for the assessment of facial shape changes with age. For this, surface scans of 88 human faces (aged 26–90 years) from the coastal town Split (Croatia) and neighboring islands (Korčula, Vis) were collected. Facial information was captured by digitizing 40 anatomically fixed landmarks and the semiautomatic extraction of 554 semilandmarks. These three-dimensional coordinate points were used to model the trajectories of average facial aging in both sexes. Men and women aged similarly until around age fifty. Then the female trajectory turned sharply. Women generally aged faster than men, specifically in early postmenopause. Overall, facial aging was associated with a flattening of the face, a “broken” jaw-line resulting from the sagging of soft-tissue, deepened nasolabial folds, and a drooping tip of the nose. The visible areas of the eyes became smaller, the lips thinner, and the ears lengthened. In postmenopausal women, facial aging was best predicted by the years since last menstruation, not chronological age, and mainly attributable to bone resorption in the lower jaw. Future research should include dental status, physiological measures, and the consequences in social face perception. To exemplify the latter approach, we will present preliminary data on attractiveness perception of standardized facial photographs across various ages.

BRUXISM IN DENTAL STUDENTS POPULATION

Vojka Zgombić Popović¹, Dino Alić², Vedran Jakupović³, Enita Nakaš²

¹ Orthonova Dental Clinic, Zagreb, Croatia

² Department of Orthodontics, School of Dental Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

³ Sarajevo School of Science and Technology, Department of Economics, 71000 Sarajevo, Bosnia and Herzegovina

Corresponding Author:

Dino Alić

School of Dentistry University of Sarajevo,

Sarajevo, Bosnia and Herzegovina

e-mail:dino-alic@live.com

Abstract

Aim: Objective of this original paper was to explore the incidence of daily bruxism as well as cause and consequences of existing bruxism in students. The primary research question was if the incidence of self-reported bruxism was higher in the final exams period than during the classes.

Material and methods: Research was conducted in two terms, in spring semester 2017/2018. Sample were 140 students of the School of Dentistry in Sarajevo. The online questionnaire had 28 questions divided into two groups, 18 yes or no questions about the awareness of bruxism, experience, habits and lifestyle and ten questions about stress levels. The period was defined as follows: T1 – classes period (12th week) May, 89 respondents T2 – spring semester final exams period (17th week) June. 51 respondents. All the participants signed the written consent for participation. Statistical analyses used were descriptive statistics, Student's t-test and Hi- square test.

Results: The presence of bruxism was found in a total of 22.9% of those surveyed, 24.7% of students reported bruxism during T1, and 19.6% of them during T2. Only 5.7% reported the presence of daily bruxism. 68.5% respondents think that they are under stress in the T1 period compared to 54.9% of respondents during the T2 period 93.8% respondents with bruxism are often stressed, opposed to 54.6% without bruxism, but with frequent stress. Average PSS-10 value is 18.5 ± 6.6 . Respondents with bruxism have a higher stress level of 19.8 ± 6.5 compared to those without bruxism - 18.1 ± 6.7 . 62.5% of “bruxers” reported pain in the TMJ and 34.4% reported frequent headaches.

Conclusion: The presence of bruxism during the exam periods is not represented at a higher level than during the classes but causes more stress and have an apparent effect on pain in TMJ and more headaches.

PREVALENCE OF TITANIUM AND NICKEL ALLERGIES IN PATIENTS UNDERGOING ORTHODONTIC TREATMENT

Martina Žigante¹, Sandra Peternel², Marijana Rinčić Mlinarić³, Andrej Pavlič¹, Darko Pop Acev⁴, Stjepan Špalj¹

¹ University of Rijeka, Faculty of Medicine, Department of Orthodontics, Croatia

² University of Rijeka, Faculty of Medicine, Department of Dermatovenerology Croatia

³ University of Zagreb, School of Dental Medicine, Croatia

⁴ Dental Office Pop-Acevi, Skopje, FYROM Macedonia

Corresponding Author:

Martina Žigante
University of Rijeka,
Faculty of Medicine,
Department of Orthodontics,
Croatia
e-mail: mzigante0@gmail.com

Abstract

Aim: Titanium is a component of some orthodontic alloys but considered to be a non-allergic material. However, nickel is a common allergen and an integral part of almost every orthodontic metal alloy. Most of the allergic reactions in the oral cavity are contact allergic reactions which are considered a delayed-type hypersensitivity reaction. A patch test is considered a method of choice in diagnostics of delayed-type hypersensitivity. This research aimed to assess the prevalence of titanium and nickel allergy in orthodontically treated patients and associated symptoms.

Material and methods: A total of 200 patients undergoing orthodontic treatment were invited to participate and 181 accepted (67% female). Patch test was performed on the upper arm skin and left for 48 hours. Allergens included nickel sulfate, titanium, titanium dioxide, titanium oxalate, titanium nitride and petrolatum as a control. Readings were performed after 2, 4 and 7 days. Signs and symptoms associated with allergies were assessed.

Results: Positive patch tests results to titanium were found in 2 subjects (1.1%) (1 to titanium oxalate, 1 to titanium dioxide), while 18 subjects (9.9%) were positive to nickel sulfate. One subject was positive to both nickel and titanium (titanium dioxide). Hypersensitivity to titanium was only found in female patients while hypersensitivity to nickel sulfate was found more frequently in female (12.3%) than in male (5.1%) subjects. Allergic subjects did not present burning mouth, dryness, swelling, pain, sneezing, runny nose, watery eyes nor changes of taste and smell more often in comparison with non-

allergic subjects but they had a history of contact dermatitis more frequently than the non-allergic ones.

Conclusion: Prevalence of titanium and nickel allergy in subjects in orthodontic treatment is low. Signs and symptoms are often mild and not highly noticeable.

Croatian Society of Orthodontics (CSO)

The Croatian Society of Orthodontics (CSO) is an association of educationally qualified and board certified orthodontic specialists.

The Croatian Society of Orthodontics (CSO) was established in Zagreb on October 6, 2006, to promote Croatian orthodontics on the principles of ethics, collegiality and the values of the orthodontic profession.

The activities and principles of the Society were recognized by the Croatian Medical Association, which officially inducted the Croatian Society of Orthodontics among professional societies on March 6, 2010.

The Society's objectives are promotion, advancement and development of orthodontics.

Membership Categories and Eligibility Criteria:

ACTIVE - Doctors of dental medicine who are also specialists in orthodontics and citizens of the Republic of Croatia.

ASSOCIATE - Orthodontic specialists who are not citizens of the Republic of Croatia, doctors of dental medicine, medical doctors, or other health care professionals and/or scientists active in orthodontics and the related fields.

HONORARY - Healthcare professionals and/or scientists who made substantial contributions to orthodontics and the related fields.

This membership type is open to Croatian citizens and foreign nationals.

Regardless of the membership category, prospective members must complete the application form available at www.hrorto.hr.

Membership of the Society will entitle you to:

- (1) receive the South European Journal of Orthodontics and Dentofacial Research in print and electronic formats;
- (2) attend the Congresses of the Society at a reduced rate;
- (3) remain informed about Society's activities;
- (4) attend lectures and meetings supported by the Society at a reduced rate;
- (5) receive Society's support and services for professional questions;
- (6) become member of World Federation of Orthodontist.

Membership fee is 400 kn (55 EUR).

