

Position Statement Aesthetics and Function

Mini review

Volume 1 Issue 2- 2021

Author Details

Egger S¹, Greven M^{2,3}

¹Private Dental Clinic, Germany

²MVZ R(h)einzahn Private Dental Clinic, Germany

³Department of Prosthodontics, University Dental Clinic, Germany

*Corresponding author

Greven M, MVZ R(h)einzahn Private Dental Clinic, Bonn, De, University Dental Clinic, Department of Prosthodontics, MedUni Vienna A, Germany

Article History

Received: September 07, 2021 Accepted: September 27, 2021 Published: October 18, 2021

Introduction

The word aesthetics comes from the greek language and means something like sensation or sensitivity. Modern European languages understand it to be the perception of beauty. Aesthetic dentistry deals with almost all disciplines in dentistry. First and foremost, it is about the treatment of tooth and periodontal diseases as well as the correction of misaligned teeth or tooth loss. In contrast to conventional dentistry, the focus here is on a harmonious appearance and complete biological / functional integration of the teeth after the treatment has been completed [1-6].

Summary

For the present contribution, a current study article from the topic of aesthetic dentistry was briefly explained and evaluated with regard to methodology, robustness of the results, applicability and relevance for the practitioner[1].

Study

Blatz (2019) Evolution of Aesthetic Dentistry. J Dent Res 98(12): 1294-1304.

With the help of a timeline diagram, the milestones in aesthetic dentistry are clearly shown, from the plastic prosthesis to the discovery of adhesive technology and osseointegration to today's modern digital 3D planning and manufacturing processes over a period of 100 years. In the recent past, the introduction of generally recognized aesthetic guidelines (checklists), bleaching techniques, further developed adhesive restorative and prosthetic materials, advanced orthodontic, periodontal and oral, maxillofacial and facial surgical procedures in everyday clinical practice has been particularly important over the past 10 years highlighted. The results are reflected sustainably/significantly in an improvement in the clinical results. Nota bene the integration of digital technologies in the 3D planning (face scanner/digital smile

design) and reconstruction (CAD/CAM, 3D printer) of natural and harmonious tooth shapes or gingiva architecture for the realization of a perfect balance of the red and white aesthetics.

In terms of aesthetic guidelines, the paradigm shift in terms of Relationship between the face shape/geometry of the incisors and gender-specific traditional features of male and female tooth shapes („female round“, male „square“) refuted/revolutionized on the basis of the most recent evidence-based clinical studies from 2014 and 2012. The most important reference point for positioning the upper central incisors in the digital set-up/wax-up is the incisal edge of the upper central incisor in relation to the resting lower jaw (resting floating).

The bleaching techniques are briefly summarized from their beginnings at the end of the 19th century to the introduction of the homebleaching techniques using carbamide peroxide gel at the end of the 80s to the modern tooth whitening strip systems based on hydrogen peroxide gel in low concentration. The in-office bleaching techniques of different concentrations and exposure times are an integral part of everyday clinical practice to this day. Possible hypersensitivities and gum irritations are mentioned as disadvantageous compared to home bleaching methods. Both procedures show no significant difference in their effect or durability after the first week after application. In the further development of adhesive restorative materials, the Essentially due to the introduction of dentine bonding in the mid-1960s as well as the further development of ceramics from feldspar to leucite reinforced glass ceramics up to today's high-performance ceramics Silicate base received. The conditioning of the ceramics could be done by means of Hydrofluoric acid etching and silanization again optimized for adhesive cementation be [2]. In the case of prosthetic and implant prosthetic materials, reports are made about the age of the VMK (metal framework / ceramic veneering) technique at the beginning of the 1960s, the introduction of zirconia/veneering ceramics at the beginning of 2000 with the problem of increased susceptibility to chipping, to the current monolithic zirconia restorations since 2010.



With the increasing demand for aesthetic restorations in the mid-1980s, bone and soft tissue reconstructions, originally from maxillofacial surgery, were extended from the outer facial area into the oral cavity. The soft tissues represent the proportion of red aesthetics and should ideally be proportioned and harmonious in the tooth (white aesthetics) pass over. Starting with the first periodontal flap operations with or without a free mucosa graft in the early 1970s, through the introduction of the free connective tissue graft in the early 1980s, to tissue replacement materials (acellular dermal matrix) in the 1990s [7-18].

Comment

Blatz et al. give aesthetic dentistry a great deal of weight in the (positive) perception and assessment of a face by third parties [15]. On the basis of numerous historical key data, the development of aesthetic and modern dentistry is conveyed chronologically and conclusively in this clearly arranged literature research. Emphasis is placed on the rapid development in the digital field over the past 10 years, which has a large number of positive aspects in predictable planning/production and reproducibility of work processes is awarded. However, the exciting question remains of how functional aspects (clinical and instrumental functional analysis) in their analogue tradition with models mounted in relation to the skull in horizontal and vertical reference position (assignment) of the lower jaw in a partially or fully adjustable articulator system can be usefully integrated into a digital treatment concept.

For the private practitioner, the following can be deduced from this: Aesthetics and function go hand in hand in dental rehabilitation^{3,4,5}. According to the industry, a digital interface for the implementation of all functional parameters from the analog articulator system into a digital concept is not yet practical from the author's point of view. The difficulty here seems to be to transfer the "coordinate system of human skulls" incl. Occlusion¹³ into the simulation situation (CAD) without any geometric losses, so that the projection of the static and especially the dynamic occlusion morphologically corresponds to the patient's circumstances; what makes the crucial point in the production of functionally exact occlusal surfaces [11,12]. At present, every "digital" system still has certain weaknesses in recording and transferring the real patient geometry into the virtual world, compared to the well-researched and proven analog articulator system^{9,14}. At the moment, a combination of analog (wax up by hand by the dental lab technician) and a subsequent scan for the digital production of functional occlusal surfaces (CAM) seems to represent a sensible compromise - however^{7,8,10}, this procedure cannot yet be referred to as a purely digital workflow be. In the recent past, 4D recording systems (predominantly Modjaw[®]), which allow an implementation of all dynamic occlusion parameters (including facial scan/cephalometric side analysis, better CBCT) in the dental CAD software (e.g. Exocad[®]) to fill the gap for digital processing (create "functional occlusal surfaces" [11,12,16,17]) without losing the patient's geometry [18-20].

The supply of high-performance ceramics or monolithic zirconia restorations should not be standardized as „airbags“ to compensate for possible deficits in the functional area. The most important reference point for positioning the upper central incisors in the digital set-up/wax-up is the incisal edge of the upper central incisor in relation to the resting lower jaw (floating). The dogma of classic male and female tooth shapes could through current studies be refuted and is with

regard to the digital tooth shape databases available today the selection is no longer relevant.

References

- Blatz MB, Chiche G, Bahat O (2019) Evolution of Aesthetic Dentistry. *J Dent Res* 98(12): 1294-1304.
- Magne P, Belser U (2004) Bonded Porcelain Restorations in the Anterior Dentition: A Biomimetic Approach. Berlin: Quintessenz.
- Vailati F, Belser UC (2008) Full-mouth adhesive rehabilitation of a severely eroded dentition: the three-step technique. Part 1. *Eur J Esthet Dent* 3(1): 30-44.
- Vailati F, Belser UC (2008) Full-mouth adhesive rehabilitation of a severely eroded dentition: the three-step technique. Part 2. *Eur J Esthet Dent* 3(2): 128-124.
- Vailati F, Belser UC (2008) Full-mouth adhesive rehabilitation of a severely eroded dentition: the three-step technique. Part 3. *Eur J Esthet Dent* 3(3): 236-257.
- Rufenacht CR (1990) Fundamentals of Esthetics. Kapitel 4: 67-134.
- Jordan RA, Bodechtel C, Hertrampf K, Hoffmann T, Kocher T (2014) The Fifth German Oral Health Study (Fünfte Deutsche Mundgesundheitsstudie, DMS V) - rationale, design, and methods. *BMC Oral Health* 14: 161.
- Greven M, Otsuka T, Zutz L, Weber B, Elger C (2011) The amount of TMJ displacement correlates with brain activity. *Cranio* 29(4): 291-296.
- Otsuka T, Sato S (2009) Effects of mandibular deviation on brain activation during clenching: an fMRI study. *J Cran Mand Prac* 27(2).
- Levy JH (2009) Teeth as Sensory Organs. *VISTAS – Dawson* 2(3).
- Egger S, Berg C (2019) Four-quadrant rehabilitation after periodontal functional and erosive damage. *Journal of craniomandibular function* 11(1): 75-90.
- Slavicek R. The function of stress management. In: *The Masticatory Organ -Function and Dysfunction*. Slavicek R (Eds). Klosterneuburg, Gamma Medizinisch-wissenschaftliche Fortbildungs-Agpp; 2002: 281-291.
- Gutowski A (2010) Die systematische Behandlung des Abrasionsgebisses von Prof. Alexander Gutowski. Lehrfilm : Live-Demonstrationskurs mit Patienten, Alexander Gutowski.
- D'Amico A (1958) The canine teeth-normal functional relation of the natural teeth of man. *J South Calif Dent Assoc* 26: 6-23, 49-60,127-142, 175-182, 194-208, 239-241.
- Keshvad A, Winstanley RB (2000a) An appraisal of the literature on centric relation. Part I. *Int J Oral Rehabil* 27: 823-833.
- Ash MM, Nelson SJ (2003) *Wheeler's Dental Anatomy, Physiology and Occlusion*. 8th ed. Saunders: Philadelphia; 2003; 417: 419.
- Slavicek R (2002) *The masticatory organ*. Gamma Medical-Scientific Education.
- Bragatto FP, Chicarelli M, Kasuya AV, Takeshita WM, Iwaki-Filho L (2016) Golden Proportion Analysis of Dental-Skeletal Patterns of Class II and III Patients Pre and Post Orthodontic-orthognathic Treatment. *J Contemp Dent Pract* 17(9): 728-733.
- Greven M, Otsuka T, Zutz L, Weber B, Elger C (2011) The amount of TMJ displacement correlates with brain activity. *Cranio* 29(4): 291-296.
- Abduo J (2012) Safety of increasing vertical dimension of occlusion: a systematic review. *Quintessence Int* 43(5): 369-380.

