

1. Sabeva E. Secondary Etiological Factors in the Development of Peri-implantitis. *Journal of IMAB*. 2020;24

Purpose: The aim of this review was to investigate the potential impact of secondary etiological factors on the development of peri-implant infections.

Results: During the review process we found a sufficient evidence to define the following factors as secondary etiological factors for development of peri-implantitis: history of periodontitis; implant surface characteristics; suprastructure characteristics; cemented restorations; implant–abutment connection; smoking; diabetes and peri-implant mucosa characteristics.

Conclusion: To reduce the risk of peri-implantitis, the following recommendations should be considered: (1) in partially edentulous patients, implant treatment should start after elimination of the periodontal infection and after the establishment of a stable periodontal status; (2) implants should be placed in areas where there is a minimum of 2 mm of keratinized mucosa; (3) an internal implant–abutment connection and screw-retained suprastructures are preferred; (4) suprastructures should be planned carefully to facilitate good oral hygiene; and (5) smoking cessation should be promoted and (6) only patients with controlled diabetes should undergo implant placement.

2. Sabeva E, Peev S, Miteva M, Georgieva M. The impact of the thread design compared to the impact of the surface topography on the primary stability of implants inserted into 7.5 fresh pig ribs. *Scripta Scientifica Medicinae Dentalis*. 2017;3(1):60-4.

The aim of this investigation was to compare the effect of the thread pitch, thread profile and the surface morphology on the primary stability of implants of a different diameter. Eighty test specimens of dental implants were inserted into 16 untreated pig ribs, as the maximum insertion torque (MIT), periosteal values (PTV) and implant stability quotient (ISQ) were measured. Considering the results, we concluded that the higher thread profile, even with a wider thread pitch, affects the primary stability more than the rougher surface of the implants.

3. Sabeva E, Peev S, Miteva M, Georgieva M. Bone characteristics and implant stability. *Scripta Scientifica Medicinae Dentalis*. 2017;3(1):18-22.

The aim of this literature data review was to investigate the influence of the bone density, bone volume, cortical bone thickness and the anatomical area on the primary stability of dental implants. Understanding the effect of the bone quality could help us predict the primary stability and prevent to some extent the poor implant stability by choosing implants of different design, diameter, length or surface modification. Considering the reviewed articles, we have concluded that inserting implants in dense bone of higher quality with thick cortical portion, as well as implant placement in lower jaw could lead to higher primary stability of those implants. To enhance the primary stability in bone of poor quality we suggest the use of implants with such characteristics of the design or dimensions, which are proven to influence the primary stability of the implant in a positive way.

4. Miteva, M., Sabeva, E., Georgieva, I., & Hristov, I. (2017). Erbium lasers in periodontology. *Scripta Scientifica Medicinae Dentalis*, 3(1), 7-11.

There are many advantages to using lasers in periodontal therapy, including better visualization of cutting, patient acceptance, and detoxification of a periodontal pocket. Other advantages are less invasive surgery to gain access, minimal wound contraction and scarring. Many of these concepts of laser therapy are positive, although others still require research. There are

clearly many favorable applications for lasers in periodontal therapy but further studies are necessary to determine in which procedures laser therapy can be best applied.

5. Georgieva, M., Dimitrov, E., Andreeva, R., Nikolova, T., Arnautska, H., & Sabeva, E. (2017). Possible choices of materials and methods for restoration of permanent teeth in Pediatric Dentistry. *Scripta Scientifica Medicinae Dentalis*, 3(2), 18-22.

Adolescence is a period of life associated with high carious activity among many patients. The immature enamel of the permanent teeth, along with the increasing number of contact surfaces, the relative autonomy in the decisions about dental treatment, poor oral hygiene, may have a positive effect on the development of the carious process in adolescents. The most common restorative materials, used in the teenage years are resin composites and other resin-modified materials, glass-ionomer cements, silver amalgam and stainless steel alloys. Yet ceramics and casting alloys are rarely used in pediatric dentistry. In the cases where the remineralization of non-cavitated demineralized surfaces of tooth fails and the carious process continues dental restorations are needed. The choice of the restoration material and treatment method are based on the every patient's individual needs, requirements for aesthetics and the necessity to protect dental structures.

6. Georgieva, M., Dimitrov, E., Andreeva, R., Nikolova, T., Borisov, B., & Sabeva, E. (2017). Use of CAD/CAM technologies in pediatric dentistry. *Scripta Scientifica Medicinae Dentalis*, 3(2), 23-28.

Aim: The aim of this article is to present a review of the literature data about the possibilities of CAD-CAM technology usage in pediatric dentistry.

Methods: An electronic search of the literature from 2005 to 2018 was performed using two databases: Medline/PubMed and Embase.

Results: The first computer system helping with restorations – CEREC (initially Siemens, now Sirona) was implemented about 30 years ago. Many systems are already available to use both in the dental office and the technician's laboratory. Now every type of ceramic material can be used in a restoration for almost all indications of aesthetic dentistry. The functional and aesthetic restorations for severely damaged primary and permanent children's teeth require materials which must be biocompatible, mechanically durable during mastication and with unchanging colour. In the literature data there are evidences about Computer Aided Design/Computer Aided Manufacturing (CAD/CAM) technology usage in pediatric dentistry for dental restorations of extensive carious lesions, eroded and abraded teeth, primary teeth with absence of a permanent successor, dental dysplasia or dental trauma of hard tooth tissues.

Conclusion: Ceramic materials and CAD/CAM technologies are increasingly being used in aesthetic dentistry both in adults and children.

7. Sabeva, E. (2018). Comparison between the influence of implant diameter and implant length on the primary stability. *Scripta Scientifica Medicinae Dentalis*, 4(2), 36-41.

Introduction: The primary stability is a factor for successful osseointegration of dental implants. It is believed that factors that can increase the contact area between the implant and the bone, such as the implant shape, length, and diameter, can also increase the primary stability. **Aim:** The aim of this study was to determine whether the increase of implant length or the increase of implant diameter would contribute more to the enhancement of primary stability.

Materials and methods: The implant primary stability of 60 implants distributed in 6 groups, according their diameter, length and surface topography was evaluated using three methods: assessment of mean insertion torque, periotest values, and resonance frequency analysis.

Results and discussion: The results demonstrated that the primary stability achieved by increasing the diameter of the implants by 0.7 mm was comparable to that obtained by increasing their length by 2 mm at a smaller diameter (4.1 mm). When the difference in the diameter increased more (from 0.7 mm to 1.5 mm, when comparing the 3.3 mm/10 mm and 4.8 mm/8 mm implants),

the increase of the length of the smaller diameter implants did not result in primary stability values comparable to those obtained during the insertion of wider and shorter implants.

Conclusion: Considering our results as well as the literature data, we can conclude that the increase of the implant diameter affects more the improving of the primary stability than the increase of the implant length. However, it should be taken into account that this refers to a specific diameter change of 1.5 mm and length change of 2 mm. More studies, including implants with a greater difference in the length and a different diameter to length ratio, are needed to confirm or reject this relation.

8. Peev, S., & Sabeva, E. (2019). Bone Block Augmentation - A Long Term Follow-Up. *Scripta Scientifica Medicinae Dentalis*, 4(2), 29-35.

Introduction: Autogenous bone block grafting is used for both vertical and horizontal augmentation of the upper and lower jaw. The bone block could be provided using extraoral or intraoral donor location.

Aim: The aim of this study was to observe the survival rate, the marginal bone level and the bleeding on probing (BOP) for a period of 4 to 6 years of implants, inserted in autogenous bone block graft.

Materials and methods: We considered advanced horizontal bone loss, where guided bone regeneration with simultaneous implant placement could not be performed and/or vertical bone loss, where vertical augmentation of the alveolar bone of more than 3 to 6 mm is required, as indications for the bone block grafting procedure. As an intraoral donor site was used the mental area.

Results and discussion: The mean observation period was 4.81 years. The mean marginal bone loss was 0.442 mm, as bone resorption was established in 48% of all cases, BOP was observed in 17.7% of the cases. No correlation was found between BOP and bone loss. The survival rate of the implants placed into bone augmented using autogenous bone block graft was 98.7%.

Conclusion: For an implant placement we considered a period of 4 months after the procedure enough to provide high survival rate of the implants. The implants placed in bone augmented using autogenous bone block grafting according to our methodology demonstrated high survival rate and unstable marginal bone level.

9. Sabeva, E. (2019). Factors Affecting Bone Temperature Increase During Implant Surgery - Review. *Scripta Scientifica Medicinae Dentalis*, 5(1), 7-15.

Introduction: During implant surgery certain amount of heat is produced. It is known that temperature increase above the critical threshold of 47°C for a minute could lead to thermal osteonecrosis, which could be the reason for an early implant failure.

Aim: The aim of this review was to reveal the multifactorial nature of bone temperature rise during dental implant surgery.

Materials and methods: PubMed and Google Scholar databases were searched to select articles related to the topic. The review includes articles published from 1972 to 2019, only in English language.

Results: All reviewed original articles, describing studies, whose aim was to observe the heat generation during implant surgery, are experimental. A few reviews were included. As potential risk factors for thermal damage of the bone were considered the site preparation protocol, drill wear, drill design, drilling speed and cooling effectiveness.

Conclusion: Heat generation during implant site preparation could be increased by performing guided implant or piezoelectric surgery. The use of combined irrigation at higher speeds, sharper drills and laser-assisted osteotomy could help avoid the risk of thermal damage to the bone. The heat production during the implant site preparation is a subject to many studies, but there is still a lack of data about the temperature rise during implant insertion.

10. Sabeva, E. (2019). Influence of Different Factors on the Resonance Frequency Analysis in Assessment of Implant Stability - Review. *Scripta Scientifica Medicinae Dentalis*, 5(1), 20-26.

Introduction: Implant stability is one of the key factors in regard to the successful outcome of implant treatment. Resonance frequency analysis (RFA) is one of the most commonly used methods in measuring the implant primary and secondary stability. The method is reliable and noninvasive, which makes it suitable at the different stages of the implant treatment.

Aim: The aim of this review was to establish some of the factors, which could affect the results obtained during RFA.

Materials and methods: Articles related to the subject were searched in PubMed and Google Scholar databases. Articles only in English language, published from 1996 to 2019, were included. Variety of keywords in different combinations were used to conduct the search.

Results: Articles, included in this review described clinical and experimental studies. Few reviews of the literature were added as well. Some of the articles considered RFA as a single method for measuring implant stability, while others described its use in combination with other methods. Bone-related factors, implant surface, diameter, length, as well as the position of the transducer of the device were discussed as factors, which could influence the ISQ values.

Conclusion: It seems that among the discussed factors, BIC, bone density, implant diameter and the orientation of the transducer demonstrated more distinct relation to the RFA results. The influence of the implant surface modification and implant length on the ISQ values remains controversial.

11. Sabeva E. Bone Augmentation Procedures - Review, International Journal of Science and Research (IJSR), Volume 8 Issue 11, November 2019, 674 – 677

Introduction: In cases of advanced horizontal or vertical bone loss, as well as insufficient bone volume to an anatomical object, bone augmentation procedures are required.

Aim: The aim of this review was to assess the reliability of four augmentation procedures, including bone block grafting, ridge split technique, lateralization or transposition of inferior alveolar nerve (IAN) and guided bone regeneration (GBR).

Material and methods: Articles published from 1992 to 2019 were included in the review. The search was performed using various combination of keywords such as “bone block augmentation”, “ridge split”, “split-crest”, “guided bone regeneration”, “lateralization of inferior alveolar nerve”, “transposition of inferior alveolar nerve”, “platelet-rich plasma”, “barrier membrane”, “bone grafting”. **Results:** The selected articles provided data about the effectiveness of the bone block grafting, ridge split technique, lateralization or transposition of IAN and guided bone regeneration. The complications, associated with the mentioned procedures were also reviewed.

Conclusion: All mentioned procedures: guided bone regeneration, bone block graft augmentation, lateralization of IAN and ridge split technique seem to be reliable methods for bone augmentation. Thanks to these techniques is possible to provide implant treatment, when the existing bone is of insufficient volume.

12. Sabeva E. Retrograde Peri-Implantitis - Review, International Journal of Science and Research (IJSR), Volume 8 Issue 11, November 2019, 678 – 681

Introduction: The retrograde peri-implantitis is a condition, that is not very common, but threatens seriously the implant survival.

Aim: The aim of this review was to summarize the basic data about the retrograde peri-implantitis and clarify the causes and treatment options for the condition.

Material and Methods: The review includes articles in English language, which were published in the period of 1992 to 2019. Articles, which were directly related to the topic were selected, as the search was conducted using the following combinations of keywords: “retrograde peri-implantitis”, “implant periapical lesion”, “apical peri-implantitis”.

Results: In the different articles the condition was termed three different ways: retrograde peri-implantitis, implant periapical lesion and apical periimplantitis. The selected articles described different classification systems, etiological factors and treatment options.

Conclusion: Unified classification system for retrograde peri-implantitis combining all the available classification models should be considered. Various factors could lead to development of implant periapical lesion, as the most important remains the infectious component. The treatment plan in the cases of retrograde peri-implantitis depends on the evolution stage of the disease, considering the clinical and radiological findings.

13. Sabeva, E. (2020). Adjunctive antibiotic therapy in cases of periodontitis and peri-implantitis. *Scripta Scientifica Medicinae Dentalis*, 5(2), 34-40.

Introduction: Periodontitis and peri-implantitis are plaque-induced diseases, which are associated with certain bacteria. The conventional treatment aims primarily at tooth or implant surface debridement. In certain cases, surgical therapy is necessary. To improve the outcome of the treatment, systemic or topical antibiotics could be considered. Aim: The aim of this review is to investigate the effect of the adjunctive systemically or topically delivered antibiotics on the outcome of the periodontitis and peri-implantitis treatment.

Materials and methods: Articles related to the topic were searched in the PubMed database. Articles published from 2000 to 2019, only in English language, were included in the review. The search was conducted with a variety of keywords in different combinations being used. These were: “periodontitis”, “peri-implantitis”, “antibiotic”, “local”, “metronidazole”, “amoxicillin”, “azithromycin”, “tetracycline”.

Results: Forty-seven articles were included in the review. The selected articles described the adjunctive systemic and/or local delivery of metronidazole, azithromycin, the combination of metronidazole and amoxicillin and some representatives of the tetracycline group, such as doxycycline and minocycline in cases of periodontitis and peri-implantitis.

Conclusion: The adjunctive systemic and topical antibiotic therapy could benefit the outcome of periodontitis and peri-implantitis treatment.