Red Aesthetics and Main Predictors For Rehabilitation Implants: Literature Review

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Abstract
The use of red aesthetics how implants rehabilitation as a replacement for lost or missing teeth have been reported in the literature as a good therapy and survival rates of success. Currently, in addition to matters related to the oral physiological functions, visual appearance and red aesthetics have been addressed as an important factor in this type of therapy. The aim of this study was to review the literature and discuss the main factors supporting the RED Aesthetic excellence before and after the rehabilitation of former regions, the use of dental implants. A search protocol was developed and included study should relate different aspects and may involve different tissues, surgical techniques, materials and expectations of the patient and relate them with getting a nice aesthetic when rehabilitation involved regions above. A total of 353 articles were found involving implantation, anterior and aesthetics. A total of 35 articles were evaluated in full, and 27 were included and discussed in this study. In order to clarify the main points related to red aesthetics in implantology, the articles were categorized according to the subjects addressed and as a conclusion we found the following determining factors for a good aesthetics in implantology: 1) Diagnosis and Planning; 2) Reverse Planning; 3) Handling of Soft and Hard Tissue; 4) Tissue perimplantar; 5) Prosthetic Resources; and 6) Psychological factors associated with Aesthetics; 7) Red Aesthetics.

Keywords
Red Aesthetics; Dental Implantation; Project Dental Implant

Introduction
Aesthetics region should be defined as any area to be restored visible in the patient’s smile [1]. The charge or immediate function has as a prerequisite the need for the present implant primary stability in your installation. Thus, to maintain the gingival architecture, the understanding of biological principles governing is essential remodeling, as well alveolar bone soft tissue [2].

Thus, the gingival contour also has great importance in the aesthetics and is connected to individual anatomical characteristics: According to the lip line, the gingival tissues can be exposed during the facial expressions [2,3]. When the gum is attacked by the metabolic products of the components of plaque bacteria, appear modifications resulting from inflammation of the affected areas, causing changes in color and gingival contour. The health, color and texture of the gingival tissues are critical to the long-term success and the aesthetic value of treatment [3].

Through this, it has become essential to proper clinical evaluation, providing a correct surgical planning and prosthetic rehabilitation aiming at excellence. This aesthetic improvement is directly related to the anatomical context of the region, both soft tissue like the hard, and the use of important gingival ceramics for the correction of certain clinical situations [3,4]. When properly planned use establishes a certain predictability, with satisfactory characteristics in its aesthetics and function, there
by correcting certain situation as black spaces due to the loss of interdental papillae, and improving areas with significant bone resorption [3,4].

Also, changes in anatomical structures, especially the maxilla become challenging rehabilitation implant having as an alternative to these tilt to obtain best results. Thus, the use of intermediate bent in order to make possible the prosthetic rehabilitation is necessary to [5]. Thus, increasing functional demands and aesthetics requires that the prosthetic rehabilitation establish a harmonic gingival contour of the tooth or implant adjacent to the interproximal full papilla gingival regular concave arc and thickness and color of the satisfactory soft tissue, especially as related to upper front teeth [5,6].

The challenge is to get the relationship between the prosthetic crown and the surrounding tissues, knowing that a well-applied ceramic restoration can mimic any dental unit. However, to achieve great results in terms of aesthetics and natural contour of the gingiva around prosthetic implant many studies are still needed. The red components of aesthetic cover not only the color, thickness and harmonic contour of the gingival tissue, as well as the presence of interdental papillae [5,6]. Thus, factors such as the height of the crestal bone, periodontal biotype, the dental restoration format, the point of contact and the implant position in the arch, play a significant role in the location and quality of interproximal papilla. The papilla plays a unique role in protecting periodontal protection including the alveolar bone crest, with protective action against microorganisms and food [6,7].

The rehabilitation treatment with dental implants has shown high predictability and high success rate, making this mode an option of choice for the treatment of tooth loss. Moreover, biological and mechanical performance of the treatment is not always accompanied by a satisfactory aesthetic result [7,8]. The reverse planning has been considered essential in the predictability of implants, guiding the treatment for functional and aesthetic results more satisfactory, however, the literature showed few articles showing measurable and reproducible aesthetic parameters for rehabilitation with implants [8].

The aim of this study was to review the literature and discuss the main factors supporting the RED Aesthetic excellence before and after the rehabilitation of former regions, the use of dental implants.

**Highlights**

- The importance of red in the aesthetic rehabilitation implants.

**Methods**

The search protocol was developed to identify the evidence related to determinants for good RED aesthetics in implantology. Thus, the study included shouldnt report different aspects and may involve different tissues (gum and bone), surgical techniques, materials and expectations of the patient and report Them with getting a nice aesthetic rehabilitation When Involved previous regions. Experimental and clinical studies Were included (retrospective, prospective and randomized) with qualitative and / or quantitative analysis. Initially, the keywords Were determined by searching the DeCS tool (Descriptors in Health Sciences, BIREME base) and later verified and validated by MeSh system (Medical Subject Headings, the US National Library of Medicine) in order to Achieve consistent search.

**Mesh Terms**

The words Were included “Dental Implantation,” “Project Dental Implant” and “RED Aesthetics”. The literature search was Conducted through online databases: Pubmed, Periodics.com and Google Scholar. It was stipulated deadline, and the related search covering all available literature on virtual libraries.

**Series of Articles and Eligibility**

The total of 353 articles were found Involving implantation, previous and aesthetics. Initially, it was held the exclusion existing title and duplications in Accordance with the interest described this work. After this process, the summaries Were Evaluated and a new exclusion was held. The total of 35 articles Were Evaluated in full, and 27 and included Were Discussed in this study.

**Main Predictors**

In order to clarify the occurrence (percentage%) and main points related to aesthetics in implantology and RED Aesthetic, the articles Were categorized According to the topics Discussed, and These 1) Diagnosis and Planning; 2) Reverse Planning; 3) Handling of Soft and Hard Tissue; 4) Fabric perimplantar; 5) Prosthetic Resources; and 6) Psychological factors associated with Aesthetics; 7) Aesthetics RED (Figure 1).
Development

The presence or absence of keratinized gingiva, both around teeth as around implants has generated much discussion in the literature [1,2]. Some authors teach that the presence of keratinized gingiva is important to stabilize the gingival margin preventing its displacement and probable bacterial invasion. Others claim that if there is no plaque the amount of keratinized gingiva is not relevant [2]. Thus, although there are no reports in the literature that discuss the variables that could influence the aesthetic rehabilitation with implants in cleft area that affects the alveolar ridge grafted and the degree of patient satisfaction with this type of rehabilitation. Therefore, the study of all these variables can contribute in a decisive way in indicating whether or not the rehabilitation of the area with unit prostheses on dental implants [1,2].

Thus, the emergence of indices that assess objectively the outcome of treatment, including: the red aesthetics of scale; aesthetics of the measurement index of implant crowns and adjacent soft tissues, collaborate as important tools for assessing the degree of red aesthetic [2]. Thus, a new stage in implantology was initiated through the development of white and red aesthetic index Belser and cols which measures the objective results in different stages of treatment, from planning to the measurement of the final outcome of treatment [3].

Thus, five questions are evaluated in red aesthetics (1) papilla mesial (2) distal papilla, (3) the curvature of buccal mucosa, (4) Level of facial mucosa and (5) curvature of the root / color and texture of soft tissue in facial appearance of the implantation site, assigning a score of 2, 1 or 0 for all five parameters with respect to red aesthetic [3,4]. All teeth were compared to their counterpart. A score of 2, 1 or 0 was assigned to each variable, thus a score 10 denoted a crown on implant and excellent score 6 acceptance limit for clinical treatment. Moreover, when the related red and white aesthetic index score was 20 maximum, determining perfectly; excellent overall aesthetic result if the total score obtained is 17; satisfactory aesthetic overall result if the sum is 15, and 12 the threshold of clinical acceptance [4].

In this system, current studies are directed to explore the thickness of the mucosa would have similar implications around dental implants [4]. The absence of keratinized gingiva was also associated with increased buildup of plaque, bleeding on probing, gingival inflammation and recession. These findings suggest that the thickness of keratinized mucosa can determine the future dynamics of the soft tissues surrounding dental implants [5].

Thus, it has been reported that the presence or reconstruction keratinized tissue around implants
can facilitate restorative procedures, to promote the aesthetic and still allow the maintenance of oral hygiene routine without irritation or discomfort to the patient [6,7]. Moreover, according to a recent consensus of the International Oral Implantology Congress, the success of the implants must meet both functional and aesthetic criteria. Based on these findings, gingival augmentation procedures are indicated in clinical practice with plaque control purpose, patient comfort and better aesthetic result, especially when in association with prosthetic treatment [8].

The width of the central incisor is multiplied by the desired red ratio to determine the point of view frontal width of the lateral incisor. The values of red ratios used are between 60% and 80% [3-8]. The resulting lateral incisor width is multiplied by the same red ratio to obtain the desired front view of the canine. Thus, certain mathematical formula to calculate the upper central incisor width for any red ratio is determined by measuring the front view width between the distal aspect of the upper canine teeth which is (a front view of the previous six teeth) / 2 (1 RED2 + RED +) = central incisor width [9].

Thus, the use of ceramic gum has been an alternative for the correction of defects or replacement of the protective periodontium, often lost by extensive bone resorption present in certain areas. Thus, you can replace the need for surgery possible, since this may be impractical for the patient much discomfort as by the increase of the cost [9,10]. Thus, using the rehabilitation gingival ceramic has the advantage of reducing the cost, labor time and discomfort for the patient the possibility of air sealing, by promoting improvement in the patient’s phonation above [11]. It also promotes improvement in aesthetics, it eliminates the black spaces present in patients with loss of papillae interproximal [12].

Even in this context, the acquisition of aesthetic excellence in the rehabilitation of the anterior maxilla is a factor of extreme difficulty, as in the work of Belser, in which none of the 45 cases evaluated was obtained a maximum score of 20, and measured the highest value of 18. Buser et al found value 16.75, Hae-lyung et al found overall score of 11.19 ± 3.59, Mangano et al 14.30 ± 2.78, Gallucci found value of 13.9 [1-4].

The emergence of various indices to measure the aesthetic result provided objective data to evaluate the diagnosis, planning, execution and final evaluation of rehabilitation. Belser, Buser and Higginbottom reported that the use of implants in the esthetic zone was well documented in the literature, but no well-defined aesthetic criteria [3-6]. According Belser et al. It can be seen that it is possible to perform a treatment associated with the white and red aesthetics without breaking the tissue integrity and return to the patient the structure lost without causing losses of the functional and aesthetic point of view of obtaining good results over time [13, 14].

**Discussion**

Rose (2012) [15] reported that the progressive regression of the alveolar bone occurs shortly after extraction and that in a period of 6 to 12 months buccolingual or horizontal reduction crest is 4mm on average, to about 50% of the initial volume and that the apicocoronal direction, or vertical, is on average from 2 to 3.0 mm. It found that the socket also presents dimensiona losses on the inner portion around 4 to 5.0 mm, corresponding to 50% of its initial width. Among several limitations observed in the planning of cases in cosmetic area, another important factor to be considered is that after tooth extraction alveoli typically has dimensions larger than the implant, which conducting regenerative procedures is necessary, including use of synthetic bone substitutes such as Bio-Oss ® (Geistlich Pharma, Switzerland), in order to keep the dimensions of the socket and the appropriate gingival contour [15].

In another condition, the socket can still have a loss of vestibular wall, in this case, we can make use of autogenous bone, cancellous cortico, the tuberosity region, as in the technique Dentoalveolar Immediate Restoration, called RDI [15]. These regenerative procedures can often be associated with the use of tissue grafts as advocated Joly et al. (2013), to an excellent architecture of peri-implant gingival tissue [16].

Together the above information, we must involve the installation of immediate temporary prosthesis with properly adjusted occlusal contacts, which in addition to optimize the comfort and aesthetics of the patient, allow the preservation and maintenance of tissue architecture favoring the final result of the work [17, 18]. These treatment options aims to give a better cosmetic result of the peri-implant tissues, which should function as a frame of the prosthetic crown to be installed after the osseointegration [14-19].

Franchiscone et al. (2012) [12] reported that the prosthesis on implant only achieve real aesthetic excellence if it is in line with the gum tissue that encase. Within this complex context of aesthetic excellence, the key topic is
the preservation of peri-implant tissues to optimize the restorative treatment. The dental implants have brought the current Dentistry unparalleled advances in aesthetic and functional rehabilitation of patients complete or partially edentulous [20-22].

On the other hand, they also brought doubts regarding the survival of the implants, especially when related to the amount of keratinized mucosa and peri-implant health [14,20-23]. In this context, recent literature data show that a mucous range keratinized less than 2.0 mm promotes plaque buildup, peri-implant bleeding and recession of soft tissue [24-26].

Some other studies have reported that the implants can survive without a range of appropriate keratinized gingiva, but the goal of the current implant is to ensure that the implants, and osseointegrados, maintain their state of full health, function and aesthetics, especially in relation to gingival esthetics [1-3]. Taking into account differences between the interface of the soft tissues around dental implants compared to natural teeth, one can question whether the peri-implant keratinized mucosa is really necessary or at least beneficial to the peri-implant health, as well as if the minimum 2.0 mm keratinized mucosa recommended for natural teeth are also applicable to dental implants [3-5].

Thus, several factors may influence the need for an appropriate range of keratinized mucosa [12-16]. Regarding sanitation, the lack of this can create a less capable of mouthwash condition and more susceptible to irritation and discomfort during routine procedures, as well as the clinical features of gingival inflammation and bleeding on probing [21,22,24,25].

On the other hand, sufficient keratinized tissue areas can offer more resistance to the forces of mastication and the frictions occurring during oral hygiene procedures [23-25]. Another important factor related to keratinized mucosa are the gingival recession in the peri-implant region. Studies have shown that the width and thickness of the peri-implant mucosa had a significant negative correlation with the gingival recession, demonstrating a range of less than 2.0 mm of keratinized tissue increased the risk of recession and exposure of the threads of the implants [24-26].

The presence of keratinized tissue around the implants also offers the advantage of ease of molding during rehabilitation, the lower probability of tissue collapse above the head of the implant and facilitating the aesthetic [22], as shown similar to tissue surrounding teeth; Thus, the stability of the soft tissue around the implant tails is an important factor to achieve optimal aesthetic result. In case of lack of soft tissue and areas of recessions grafting techniques can be displayed, and although the discomfort provided by surgical techniques, these positive results show significant gains and tissues, providing comfort and aesthetic appropriate to the patient [14-25].

There are several techniques available to increase the gingival thickness as the flap positioned apically, the flap positioned laterally, the free gingival graft, the flap of partial thickness positioned apically or connective tissue graft [20]. It is important to note that the keratinized mucosa is not decisive in isolating the front implants to bacteria in the oral cavity [2,3].

It is noteworthy that the vast majority of patients seeking rehabilitation treatment with dental implants lost their natural teeth because of periodontal disease induced by plate [3,4] bacteria. Thus, it is extremely important that patients rehabilitated by implant prostheses are within a plaque control program and constant professional guidance regarding hygiene techniques and oral therapy, which will contribute to the clinical success of rehabilitation treatment [4,5].

Within the limits of this clinical case, it can be concluded that the free gingival graft is a predictable and easy technique for achieving increased range of keratinized mucosa peri-implant mucosa prosthesis protocol[19]; But hygiene techniques and professional oral physiotherapy and carried by the patient are fundamental to the clinical success of the rehabilitation treatment [1-3].

Conclusion

RED Aesthetics has become a primary factor in the patient’s expectations, and the duty of the surgeon professional knowledge of the fundamental aspects in achieving this aspect. A correct treatment plan in order to meet the restorative and surgical protocols appropriate, thus being able to achieve satisfactory results is required.

Competing Interests

The authors declare que they have no competing interests.

Reference


