ISSN: 2230-9926

Available online at http://www.journalijdr.com

IJDR

International Journal of Development Research
Vol. 07, Issue, 07, pp.13923-13927, July, 2017

ORIGINAL RESEARCH ARTICLE

Open Access

MAIN PREDICTORS FOR AESTHETIC DENTAL IMPLANT: BRIEF REVIEW

[1]Maria Carolina Ibrahim do Nascimento, [1]Monique Caroline Agorreta, [1]Tamiris Fernanda Ziviani, [1,2]TaylaneSoffenerBerlanga de Araújo, [1,2]Ana Paula Bernardes da Rosa Maluf Abbud, [1,2]Patrícia Garani Fernandes, [1,2]Leandro Moreira Tempest, [1,2]Carlos Alberto Costa Neves Buchala, [1,2]Elias Naim Kassis and [2,*]Idiberto José Zotarelli Filho

[1]University Center North Paulista (Unorp) - São José do Rio Preto – SP, Brazil
[2]Post graduateandcontinuingeducation (Unipos), Street Ipiranga, 3460,
São José do Rio Preto SP, Brazil 15020-040

ARTICLE INFO

Article History:
Received 05th April, 2017
Received in revised form
27th May, 2017
Accepted 26th June, 2017
Published online 31st July, 2017

Keywords:

Dental Implants,
Aesthetics,
Soft And Hard Tissues.

Corresponding author:

ABSTRACT

The use of implants 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 aesthetics have been addressed as an important factor in this type of therapy. Thus, the aim of this study was to review the literature and discuss the main factors supporting the 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 (gum and bone) , surgical téncnicas , materials and expectations of the patient and relate them with getting a nice aesthetic when rehabilitation involved regions above. A total of 332 articles were found involving implantation, anterior and aesthetics. A total of 30 articles were evaluated in full, and 28 were included and discussed in this study. In order to clarify the main points related to 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 : - Diagnosis and Planning ; - Reverse Planning; - Handling of Soft and Hard Tissue; - Tissue perimplantar; - Prosthetic Resources; and - Psychological factors associated with Aesthetics .

Citation: Maria Carolina Ibrahim do Nascimento, Monique Caroline Agorreta, Tamiris Fernanda Ziviani, TaylaneSoffenerBerlanga de Araújo1, Ana Paula Bernardes da Rosa Maluf Abbud, Patrícia Garani Fernandes, Leandro Moreira Tempest, Carlos Alberto Costa Neves Buchala, Elias Naim Kassis, Idiberto José Zotarelli Filho. 2017. "Main predictors for aesthetic dental implant: brief review", *International Journal of Development Research*, 7, (07), 13923-13927.

INTRODUCTION

Besides the aspects of oral physiological functions, visual appearance and aesthetics have been addressed as an important factor in this type of therapy. In restorative dentistry, a pleasant aesthetic has been described as a blending of natural dentition and prosthetic elements, in addition to identification, adaptation and correct conditioning of these elements with the marginal and peripheral tissues (Belser *et al*., 2004a). The use of implants in the anterior regions have been widely distributed due to development of different techniques, both for handling the periodontal tissues and for the measurement and modeling of bone tissue as well as in the development of new materials related to prosthetic resources (Belser *et al*., 2004b).

Thus, the clinical evaluation and treatment planning should be performed in order to take into account the individual needs and expectations of each patient, making the specific treatment and ensuring satisfaction with the existing aesthetic complaints (Le, 2015). The use of implants as replacements of lost or missing teeth have been reported in the literature as a good therapy success and survival rates (Benic *et al*., 2012). Its positive results are related to the predictability, efficiency and reliability of this type of treatment in the replacement of lost teeth and the reestablishment of mastication, swallowing, speech, smile, and even in acting positively in patients with painful symptoms orofacial (Tagliareni *et al*., 2015).Aesthetics perimplantar in contemporary dentistry have lived a constant pursuit of excellence in order to meet patients become

increasingly differentiated and often lay great expectations regarding the outcome of their treatment (Yao, 2014). The aim of this study was to review the literature and discuss the main factors supporting the aesthetic excellence before and after the rehabilitation of former regions, the use of dental implants.To review the current literature on the use of implants in anterior regions and determine the factors and concepts important to the success of aesthetic deployment.

METHODS

A search protocol was developed to identify the evidênciasrelacionadas with determinants for good aesthetics in implantology. Thus, the study included should relate different aspects and may involve different tissues (gum and bone), surgical téncnicas, materials and expectations of the patient and relate them with getting a nice aesthetic when rehabilitation involved anterior regions. Experimental and clinical studies were included (retrospective, prospective and randomized trials) with qualitative and / or quantitative analysis. Initially, the key words 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 "Aesthetics". For further specification, the "anterior maxilla" description for refinement was added during searches. The literature search was conducted through online databases: Pubmed, Periodicos.com and Google Scholar. It was stipulated deadline, and the related search covering all available literature on virtual libraries.

Series of Articles and Eligibility

A total of 332 articles were found involving implantation, anterior 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. A total of 30 articles were evaluated in full, and 28 were included and discussed in this study.

Main Predictors

In order to clarify the main points related to aesthetics in implantology, 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.

Literary Review

With the emergence of dental implants created a great expectation in dentistry since structural loss could be reestabelecidasgerando solutions to the cases of free ends, and anterior and posterior unitary losses without the need for involvement of adjacent teeth for replacement (Sanseverino, 1998). The authors of the most important studies on implantology describe the pre-surgical phase is vitally important to a predetermined and predictable result. Francischone *et al*. 1998 advocated the use of a tool called a "reverse planning" and is described by the author as indispensable within the implant. The technique is based on establishing a surgical protocol and rehabilitation which considers the identification of the prosthetic defect that the patient has and results in the construction of a clinical simulation result, allowing predictability in implant treatment, with a fundamental application mainly aesthetic areas. Another technique is discussed in the literature related to the immediate deployment after surgical procedures. Wohrle *et al*. (1998) described the experience with the use of immediate implants in the anterior maxilla. The main objective of the study was to evaluate the predictability of the architecture maintenance of soft and hard tissues and perform cosmetic restoration. the success of osseointegration were analyzed, the improved patient comfort and acceptance of the same treatment. We selected 14 patients, evaluated five sides and nine central incisors incisors in the upper region with adequate gingival contour without conducting prior periodontal surgery in the region without acute inflammation or apical periodontitis.

The results showed that the implant maintained its stability after primary "conventional" period of six months and osseointegratedforamconsiderados. The soft tissues also remained favorable and most patients maintained gingival architecture (including the interdental papillae), harmony and continuity of hard and soft tissues were predicted in all cases. The application of this technique seems promising, but there is a need for a more controlled clinical studies that have longer periods of monitoring in order to demonstrate their total predictability when this technique is related to the stability of the peri-implant tissues (Tosta *et al*., 2007). In 2008, Manfro *et al*. (2008) reported that a correct deployment to be aesthetically acceptable depends on an ideal three-dimensional position, fixing and stable and aesthetic soft tissue contours. The autoresapresentaram a case of rehabilitation of bilateral lateral incisors with a range of surgical techniques, in order to preserve the existing gingival structure and concluded that the incision groove bottom allows the maintenance of gingival aesthetics achieved with conventional prostheses. Thus, it is concluded that maintaining the quality of the soft tissue in cases that require bone reconstruction is a major challenge for the implantodontist. This difficulty had already been reported by Askary *et al*. (2004), which suggested that the refinement and obtain optimal soft tissue profile are intermediate clinical procedures that can be performed after placing of the abutment. Due to the simplicity of the technique, the predictability and the proven strength of the metal pillars make these are the most suitable in most cases prosthetic (5). Nevertheless, the use of metal intermediate can result in changes at the end point of pure porcelain crowns due to its darkened color, and the possibility of dimming the gingival margin when it is very thin. Thus, for the above regions, the use of aesthetic called pillars, particularly ceramic may be indicated because of lower load and higher masticatory esthetic demands. Figueiredo *et al*. (2011) reported that the components made from zirconium oxide are a very interesting option, since they combine biocompatibility, aesthetically pleasing and high fracture resistance. Furthermore, Bottino *et al*. (2005) reported in their work, a study with dogs in 1998, where it was found that the ceramic abutments Alumina allow the formation and adhesion of epithelial and connective tissue around 1.5 to 2.0 mm in height level between the bone and the peri-implant mucosa.

The surface layer of the ceramic is chemically stable, corrosion resistant and therefore allows cells to develop on it. In working Cutrim *et al*. (2011) the ceramic abutments are indicated in the unit replacement of any tooth where aesthetics are paramount, and may be considered an alternative in other clinical situations, including in the upper region.Mesquita *et al*. (16) in 2006, they reported a case of an implant-supported restoration made on a ceramic abutment Zirconia and obsevaram the zirconia abutment offers a favorable substrate fabrication of ceramic crowns, allowing achieve better cosmetic results than metal components in the anterior region is indicated more specifically to areas with sufficient thickness to gum a metallic component. For a long time the physiological functions were the main factors for implant treatment, but with the evolution and development of new techniques, these began to be also for previous regions, such as in cases involving lack of single tooth or multiple (Belser *et al*., 2004a; Belser *et al*., 2004b). The aesthetic need for the implant to be "equal" to the lost tooth, that is natural, is the greatest desire of those seeking implant treatment. Thus, the restoration of the natural dentition missing has an additional impact on the individual and social personality of the patient. Experience has proven that most patients not only realize the functional improvement provided by prosthetic treatment, but also a spiritual and social significant improvement as a result of the change in (Askary, 2004) appearance.

For Figueiredo *et al*. (2011), the prosthetic rehabilitation of edentulous space isolated in the anterior maxillary region is critical due to high demand aesthetics involved in the resolution of these cases. Even after conventional prosthetic rehabilitation, it is common to observe, by patients, some degree of dissatisfaction with the final aesthetic result, since various aspects like the shape and the amount of remaining bone, the quantity and quality of the mucosa and also the aesthetic characteristic of the prosthetic components used must be favorable so that we can achieve an aesthetically harmonious result. According to the literature review in this work the pursuit of aesthetic when used implants seems to depend on some factors that are considered important, and according to the percentage of bibliographic findings: 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 (Figure 1). Thus, these factors will be discussed in order for a correct indication and use of implant therapy in aesthetic anterior regions.

DISCUSSION

Planning

The diagnostic process should be performed by obtaining the clinical data of the patient, the use of tools dignóstico imaging, anamnesis application and determination of the patient's expectations regarding the treatment in question (Tunes, 1999). These factors are essential and its absence or failure can result in incorrect planning with consequent dissatisfaction of the patient. For the initial planning, the surgeon should evaluate some anatomical aspects of the area to be rehabilitated. According to Buser *et al*. (2000), this avaliaçãoinclui a variety of aspects such as the shape and thickness of the bone crest, presence or absence of vestibular depression, conditions of the neighboring teeth, intermaxillary relationship, presence or absence of diastema, thickness and contour of the mucosal tissues vestibular, the papilla position, quality of gum phenotypes and the smile line location. Furthermore, periodontal and endodontic conditions, the root inclinations and the situation of the crowns of remaining teeth should be carefully studied, and not in good condition should be treated previously (Manfro *et al*., 2008). The replacement of affected teeth may be accomplished by immediate implants in cosmetic fields. This type of intervention may give the patient a more comfortable treatment with less invasive surgery and a shorter interval of time (Slagter *et al*., 2014). However, some authors as Tosta *et al*. (2007) argue that the remodeling of peri-implant tissues after extraction, even after immediate implant placement may compromise the aesthetic outcome of treatment. In general, careful clinical, radiographic, tomographic reviews, study analysis models mounted on semi-adjustable articulator and the application of diagnostic waxing are for a correct diagnosis and optimal planning according to each case.

Reverse Planning

An implant-supported restoration to be considered appropriate to promote harmony between the functional, aesthetic and biological aspects. These concepts have resulted in the development of a protocol entitled "Reverse Engineering", where implants are positioned according to the requirements dictated by the restoring phase and not the bone condition available in the area. Initially, it is established a protocol based on the identification of the prosthetic defect that the patient has and subsequent construction of a simulation of clinical outcome. According Francischone *et al*. (1998), this technique allows to evaluate the determinants to obtain aesthetics in implantology, especially those related to reconstruction of bone architecture, resulting in a better three-dimensional positioning of the implant, combining proper handling of soft tissue during deployment (1st surgical phase) as well as the reopening of the implants (surgical 2nd phase).

Manipulation of Soft And Hard Tissues

Several clinical procedures involving surgical muco-gingival therapy and nonsurgical has been developed by several authors to improve aesthetics in treatments made using implants (Manfro, 2008). The success of these rehabilitations requires not only the osseointegration of the implant, but mainly the ideal three-dimensional positioning of the implant and the outline of stable and aesthetic soft tissue. Often the lack of such tissues or improper handling during the processing resulting in a greater number of procedures, extending the time and cost of treatment (Manfro *et al*., 2008). The manipulation of the soft tissues at the time of tooth extraction can be decisive for the final aesthetic result. The refinement and obtaining the tissue profile, on the other hand, are intermediates clinical procedures that can be performed after placement of the column (Askary, 2004). If some surgical corrections mucogingival need be employed, these can be performed before or after the placement of the implant, reconstructing the lost contours (Potashnick, 1998). When the ready placement of implants and temporary prosthesis is performed, care must be taken not to affect gingival contour may be modified, for example, for some molding procedures, test prostheses and components (Mankoo, 2004). If they occur, these defects can be corrected with the use of connective gingival grafts promoting gum thicker and favorable margin entrance exam.

Tissue Perimplantar

In cases where the control of bacterial plaque is performed satisfactorily, the peri-implant tissue may exhibit characteristics such as color, texture, consistency, and similar sangramanetomuito with normal periodontal corresponding (Fredman, 1999). The gingiva around natural teeth and the mucosa overlying the implants differ in the composition of connective tissue, the alignment of collagen fibers and distribution of vascular structures in the apical portion of the junctional epithelium (Lindhhe *et al*., 1999). The probing depth around implants can reach the alveolar bone due to inconsistent coupling between the peri-implant mucosa, and the surface of the implant. Because of this depth, Lindhe *et al*. (1992) showed that, compared to biofilm accumulation, inflammatory response often involved implants in bone tissue, while for natural teeth inflammation is restricted to the gingival tissue. The following section the same line of reasoning, reported that maintaining the health of the peri-implant mucosa is a critical factor, since the sealing of the gingival tissues around the implants is not effective progression of periodontopathogenic microorganisms when poor oral hygiene and a negative control board are present.

In natural teeth collagen fibers that adhere to the cementum are essential to the health of periodontal tissue in question, whereas in accession implants these are not essential to the success of perimlantar health. Some authors describe the existence of a circular formation of collagen fibers that support the junctional epithelium between the implant and the bone, even so grip between them seems to be an area of weakness (Manfro *et al*., 2008). The periimplant mucosa is made up of keratinized epithelium, the sulcular epithelium, junctional epithelium and connective tissue zone formed by peri collagen fibers anchored in the marginal ridge and arranged parallel to the implant surface (Lindhhe *et al*., 1999). According to the same author, the insertion of the peri-implant mucosa across the different types of pillars (smooth or rough) is similar, however, several studies show that bacterial biofilm accumulation on the roughened surface an exposed implant in the oral cavity is significantly higher in that the implant has a smooth surface. However, it is important to note that the surface roughness of the implants come optimal conditions for healing by providing clot stability and maintenance thereof and the surface of the implant and (Lindhhe *et al*., 1999). The stability of the peri-implant bone crest in the long term is considered an essential factor for implant treatment, the functional and aesthetic point of view (Baumgarten, 2005). Therefore, during the assessment of radiographic examinations should check the presence of vertical or horizontal bone loss and the presence of radiolucent involving the implant. This review shows the current condition of the bone that supports the osseointegrated implant.

Prosthetic Resources

Many cosmetic problems related to the rehabilitation of the anterior implant, have been solved by the use of ceramic abutments. Some fatoresrelacionados the implants are closely linked to the pillars or intermediaries, over time, have undergone major changes, seeking appropriate aesthetic solutions. The current prosthetic concern has a wide vision, which ranges from the functional analysis to the quality and the kind of smile, the harmony of the structures involved and the technical details of the area to be repaired (Sanseverino *et al*., 1998). Searches were carried out in order to define and modify the surgical protocol for treatment with dental implants by changing your design presentation and the healing time. The use of immediate crowns unit to restore teeth in aesthetic areas favors the maintenance of the hard and soft tissues (Wohrle, 1998) region. The implants that utilize a prosthetic component reduced relative to the diameter of the implant platform (far microgap the bone crest) also appear to be able to preserve the peri-implant bone level. The removal of this microgap of the bone crest region, by reducing the diameter of the prosthetic component relative to the implant platform, reduces or eliminates bone loss, aesthetic and functional bringing significant clinical benefits (Baumgarten, 2005). Sailer *et al*. in 2007, showed clinical cases comparing the aesthetic results achieved with pillars on titanium implants and zirconia abutments. It was concluded that for the posterior regions prefabricated pillars titanium are listed as apresentamboa physical and mechanical strength and require procedures classified as simple and low cost In the anterior region, the prefabricated pillars titanium can only be recommended in cases of low aesthetic demand. In aesthetically demanding patients is recommended to graft tissue before abutment connection. But the pillar of custom or pre-fabricated zirconia brings excellent when aesthetics is the main factor.

Regarding provisional, Padovan *et al*., (2007) reported that the installation of temporary immediate sobre implante osseointegrated prosthesis has proven to be an excellent alternative treatment as it eliminates the use of removable denture and the need to perform the second stage surgery, providing greater comfort for the patient and optimize aesthetics, reduce costs and time of treatment, which differs from the statement of Salama et. al. (2007) (20), which further emphasizes that perform the installation immediate temporary crown only where achieve adequate primary stability. It is essential that the temporary crown is free of occlusal contacts during the period of osseointegration. Regarding the prosthetic screwed and cemented implant Cutrimet. al. (2011) observed that there is no doubt that the primary requirement for the success of the implant is osseointegration. The prosthetic implant retention by use of cement eliminates the making of openings, which are not aesthetic, to access the screw. However, as the use of screwed prostheses, modern opaque composite materials in its composition can reduce the grayish screw contributing to a satisfactory cosmetic result.

Conclusion

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. It notes that all efforts should be aimed at the final result.

Competing interests

The authors declare no competing interests.

REFERENCES

Askary AESE. 2004. Cirurgia Estética.São Paulo: Santos.

Baumgarten HA. 2005. New implant design for crestarl bone preservation: initial observations and case report Pract Proced Aesthet Dent.,17(10):735-740.

Belser, U. C., Schmid, B., Higginbottom, F. &Buser, D. 2004b. Outcome analysis of implant restorations located in the anterior maxilla: a review of the recent literature. International Journal of Oral and Maxillofacial Implants 19 (Suppl.), 30–42.

Belser, U., Buser, D. &Higginbottom, F. 2004a. Consensus statements and recommended clinical procedures regarding esthetics in implant dentistry. International Journal of Oral and Maxillofacial Implants 19(Suppl.), 73–74.

Benic GI, Wolleb K, Sancho-Puchades M, Ha¨mmerle CHF. 2012. Systematic review ofparameters and methods for the professional assessment of esthetics in dental implant research. J ClinPeriodontol 39 (Suppl. 12): 160–192.

Bidra AS, Rungruanganunt P. 2013. Clinical outcomes of implant abutments in the anterior region: a systematic review. J EsthetRestor Dent. Jun;25(3):159-76.

Bottino MA, Faria R., Buso L, Silgtz F. 2005. Implantodontia estética – O desenvolvimento de um novo pilar cerâmico, v. 2 , n 6 , Novembro, Dezembro.

Buser D, Von ARX. 2000. Surgical procedures in partially edentulous patients with ITI implants.Clin Oral Implant Res 11(SuppL):83-100.

Cutrim ES, Santana IL, Bennati BB. 2011. Prótese sobre implante parafusada versus cimentada: uma revisão de literatura. Odontol. Clín.-Cient., Recife, Suplemento 535-540, out./dez..

Figueiredo CM, Dias RP, Amado FM, Rossi FCC, 2011. Ishikiriama BLC, Oliveira TM, Santos CF. O uso de implantes, enxerto ósseo e condicionamento do tecidogengivalperimplantar na reabilitação estética de áreaanterior de maxila.Odontol. Clín.-Cient., Recife, 10 (3) 285-291, jul./set..

Francischone CE, Vasconcelos L. 1998. Osseointegração e as próteses unitárias. São Paulo: Artes médicas.

Fredman AL, Green K, Salkin LM. 1999. An 18-year longitudinal study of untreated mucogingival defects. JournalofPeriodontology; 70(10): 1174-6.

Le B, Nielsen B. 2015. Esthetic implant site development. Oral MaxillofacSurgClin North Am. May;27(2):283-311.

Lindhhe J, Berglundhe T. 1999. A mucosa do perimplante. In: Lindhe J, Karring T, Lang PL, editors. Tratado de periodontia clínica e implantologia oral. 3. ed. Rio de Janeiro: Guanabara Koogan; p.631-9.

Manfro R., Júnior WRN., Loureiro JA. 2008. Estética em implantodontia, da reconstrução à prótese -apresentação de um caso clínico. Rev. Cir. Traumatol. Buco-Maxilo-fac., Camaragibe v.8, n.1, p. 35 - 40, jan./mar.

Mankoo T. 2004. Contemporary implant concepts in Aesthetic Dentistry: Prat 2: Immediate single tooth implants. PractProcedAesthet Dent. v.16, p. 61-68.

Mesquita AMM, Souza ROA, Vasconcelos DK, Avelar RP, Bottino MA. 2006. Zirconia abutment: an alternative for anterior esthetic resolution- A case report. Implant news;3(6):619-22.

Padovan LEM. 2007. Prótese imediata em implante unitário após enxerto ósseo em paciente fissurado: acompanhamento de um ano. Implant News, V.4, Nº 1 pag 31-35.

Potashnick SR. 1998. Soft tissue modeling for the esthetic single tooth implant restoration. J Esthetic Dent, v. 10, p.121-131.

Sailler I, Zembic A, Jung RE, Hammerle CHF. 2007. Single-Tooth Implant Reconstructions: Esthetic Factors Influencing the Decision Between Titanium and Zirconia Abutments in Anterior Regions. European J Esthet Dent. 2(3):296- 310.

Salama M. Timing, 2007. Positioning, and sequential stanging in Implant Esthetic Teraphy: A four dimensional perspective. Int. J. Restorative Dent;27:313-323.

Sanseverino CAM. 1998. Manipulação do tecido gengival para um melhor resultado. Paul CirDent maio-jun; 52(3): 203-204.

Slagter KW, den Hartog L, Bakker NA, Vissink A, Meijer HJ, Raghoebar GM. 2014. Immediate placement of dental implants in the esthetic zone: a systematic review and pooled analysis. J Periodontol. Jul;85(7):e241-50.

Tagliareni JM, Clarkson E. 2015. Basic concepts and techniques of dental implants. DentClin North Am. Apr;59(2):255-64.

Tosta M., Ferraz P., Filho G.S.M., Guerra L., SaraceniCHC.,TumenasI. 2007. Previsibilidade em áreas estéticas: o conceito da abordagem imediata. Rev. Dental Press Periodontia Implantol., Maringá, v.1, n.1, p.95-111, jan./fev./mar. 2007.

Tunes UR., Rappa GE. Atualização em Implantodontia e Periodontia. São Paulo, Artes Médicas, 1999.

Wohrle PS. 1998. Single-tooth replacement in aesthetic zone with immediate provisionalization: fourteen consecutive case reports. Pract.Period.Aesthet.Dent., v.10, p.1107-1114.

Yao J, Tang H, Gao XL, McGrath C, Mattheos N. 2014. Patients' expectations to dental implant: a systematic review of the literature. Health Qual Life Outcomes. Oct 29;12:153.

****