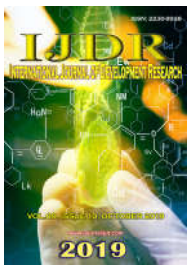
ISSN: 2230-9926

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

IJDR

International Journal of Development Research
Vol. 09, Issue, 10, pp. 30419-30425, October, 2019



RESEARCH ARTICLE OPEN ACCESS

PROSTHESIS PROTOCOL WITH IMMEDIATE LOADING IN EDENTULOUS PATIENT: CASE REPORT

Josilane N. M. Correia[1]*, Mainã C. B. Reis[1], Sáskia R. Bomfim[1], Murilo C. A. Vieira[2], Marcílio A. Ferraz[3] and Ricardo S. Alves[4]

[1]Undergraduate student of Dentistry, Faculdade Independente do Nordeste (FAINOR), Vitória da Conquista, Bahia, Brazil
[2]Dental Surgeon, Specialist in Implantology
[3]Coordinator of the Graduate studies in Implantology of the Brazilian Dental Association, Vitória da Conquista Bahia, Brazil
[4]Professor, DepartmentofDentistry, Faculdade Independente do Nordeste – (FAINOR), Vitória da Conquista, Bahia, Brazil

ARTICLE INFO

Article History:
Received 10th July, 2019
Received in revised form
02nd August, 2019
Accepted 14th September, 2019
Published online 16th October, 2019

Key Words:

Immediate loading in Dental Implant;
Edentulous arch;
Oral Rehabilitation.

ABSTRACT

The edentulism results from the aggravation of dental pathologies such as dental caries, causing the loss of dental elements and significant changes in the stomatognathic system that negatively affect the quality of life. Immediate loading protocols allow the patient greater comfort, as it eliminates the need for a temporary removable prosthesis and reduces the number of surgical exposures, with potential for preservation of the bone and gingival architecture, which increases the efficiency of this type of procedure.The objective was to present in a clinical case report the treatment and recovery of an edentulous patient submitted to dental implant using the mentioned technique. A surgical procedure was performed in order to fix dental implants. Because it is an esthetic area, we opted for the protocol type technique with immediate loading. In this case, a satisfactory osseointegration was observed, in the same way that the patient was satisfied with regard to function and esthetics. The dental implant therapy of the protocol type, associated to immediate loading has demonstrated a great deal of efficiency regarding the functionality of the patient integrated into the esthetics. This point is fundamental, as esthetics have become an emphasized point today.

Citation: Josilane N. M. Correia, Mainã C. B. Reis et al. 2019. "Prosthesis protocol with immediate loading in edentulous patient: case report", *International Journal of Development Research*, 09, (10), 30419-30425.

INTRODUCTION

Edentulism is associated with a wide variety of conditions. In Brazil and in the world it affects adults and mainly elderly people, it usually arises from other oral pathologies that progress and cause total or partial loss of teeth (BORDA *et al*., 2017; RIVAS*et al*., 2018). This is a public health problem, because it exposes the reality of oral health in this broad population, its sociocultural characteristics and the model of hegemonic dental practice. These changes present significant impacts on the quality of life and health in this part of the population (SILVA *et al*., 2015).

***Corresponding author:* Josilane N. M. Correia,**
[1]UndergraduatestudentofDentistry, Faculdade Independente do Nordeste (FAINOR), Vitória da Conquista, Bahia, Brazil

The quality of life of edentulous patients is directly related to their oral health when factors related to comfort in their daily activities are taken into account - such as chewing, phonetics and social interaction. In addition to these factors, there are also damages that involve general health such as some nutritional disorders (CARVALHO *et al*., 2019). This situation is a public health problem and a great challenge, given that poor oral health leads to a spectrum of comorbidities (CANO-GUTIÉRREZ *et al*., 2015). The functional and esthetic rehabilitation of these patients has always been a challenge for dentists in clinical practice (POLUHA*et al*., 2015). To solve this problem, osseointegrated implants have been used for some years. According to Schimmel *et al.* (2014), these types of implants have promoted major changes in the rehabilitation of fully or partially edentulous patients. The preference for implant-supported fixed prostheses in fully edentulous patients

is due to the greater masticatory efficiency and the comfort they provide, besides favoring the psychological aspect, since it eliminates the removable character of the conventional removable total dentures. In the conventional treatment of total rehabilitation in implantology it takes from four to eight months to do a prosthetic loading, which often causes an unpleasant waiting period for the patient (BRANEMARK *et al*., 1977). Subsequently, some studies have demonstrated the possibility of immediate loading of implants in overdentures and fixed total implant prostheses on implants, the latter being also called a protocol-type prosthesis (CHIAPASCO *et al*., 1997). Although they have the highest cost and greater care in the preparation and surgical-prosthetic planning, protocol-type prostheses are the ones with the highest clinical application (ROCHA *et al*., 2013).However, studies have demonstrated that the success and greater efficiency of the treatment with this type of prosthesis are obtained when together the prosthetic loading is used immediately after the installation of the implants (DE MORAES *et al*., 2015; GOMES *et al*., 2018). The immediate loading of dental implants has become popularized by several factors: shorter treatment time and trauma, esthetic and psychological benefits for the patient, among others. However, there is a fundamental prerequisite for implant success, which is the need for substantial primary stability at the time of insertion and after implant loading (AGLIARDI *et al*., 2010). The success of fixed total dentures of this type, in immediate load is predictable, and occurs when they are correctly indicated, following the prosthetic surgical techniques efficiently. With this, the immediate loading technique, when well indicated, has satisfactory functionality and esthetics (AGLIARDI *et al*., 2010). In this sense, it is necessary to evaluate systematically implants of immediate type protocol load, case by case, as in this report.

CASE REPORT

This report followed the current Resolution for Ethics in Human Research Number 466/12 of the National Health Council (Ministry of Health, DF) and was submitted and approved by the Research Ethics Committee of the FaculdadeIndependente do Nordeste (FAINOR), under CAAE: 99242918.3.0000.5578 and approval number 2,960,907. A 50-year-old female patient, leucoderma, presented to the Professional Improvement School of the Brazilian Association of Dentistry, Regional Vitória da Conquista / BA, with esthetic complaint. During anamnesis the patient reported being allergic to the drugs Nimesulide, Prednisone and Diclofenac Sodium, but did not report any systemic problems and was therefore classified as ASA I.Clinical examination revealed absence of all upper and lower elements (Figure 01). As a pre-defined treatment plan (dental implants with fixed prosthesis), laboratory tests (complete blood count, coagulogram, fasting blood glucose) were requested, without any changes in the indices that could prevent the procedure, and Cone-Beam Computed Tomography (CBCT) .The imaging examination showed a range of bone tissue in height and thickness in the mandible compatible with the osseointegrated implant therapy chosen (Figure 02). The procedure for the installation of four dental implants measuring 3.75 x 13mm, with External Hexagon connection of the SIN brand (SIN Implant System: São Paulo - Brazil), and fixed prosthetic rehabilitation in acrylic resin in the arch inferior and total removable total prosthesis. After assessing blood pressure (120 x 80 mmHg), subperiosteal infiltrative anesthesia of the inferior alveolar, lingual and buccal nerves was performed using Mepivacaine 2% with vasoconstrictor (epinephrine) 1: 100,000 (Nova DFL: Rio de Janeiro - Brazil) (Figure 03). A supracrestal incision was made up to the posterior area to the region of the mental foramina and then relaxing vestibular incisions with a 15C scalpel blade (Lamedid: São Paulo - Brazil) (Figure 04).

Figure 1. Clinical aspect of the edentulous edge

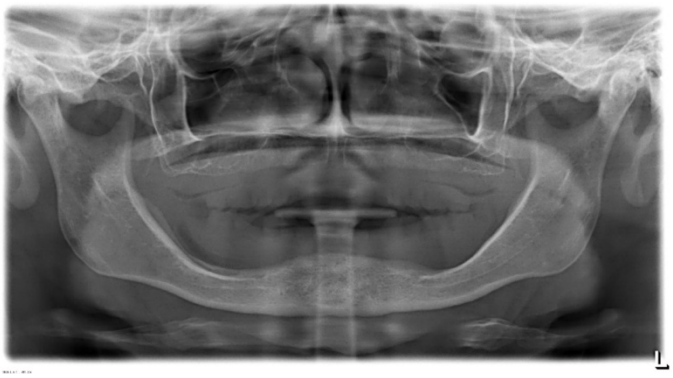


Figure 2. Radiographicexam

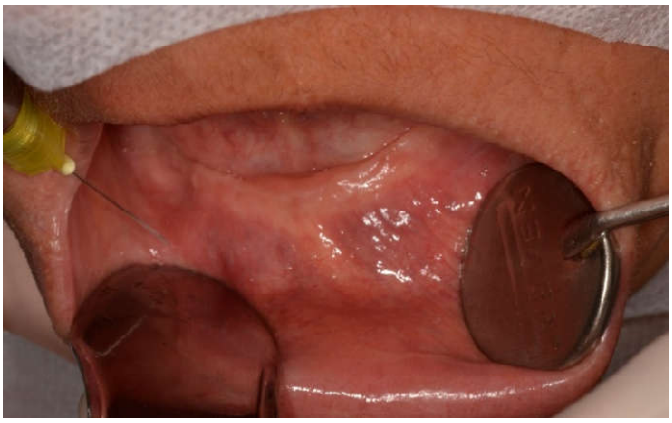


Figure 3. Subperiosteal anesthesia of the inferior, lingual and buccal alveolar nerves

The total detachment of the flap with Molt Curet 2/4 was started until the region of the mental foramen, which were visualized. A point in the supracrestal midline and two other points, 3 mm mesial to the mental foramina, were demarcated with the aid of the surgical lance of SIN (S.I.N. Implant System: São Paulo - Brazil). The milling of implants (S.I.N. Implant System: São Paulo - Brazil) began with the same milling cutter until the rupture of the cortical bone and surgical guide aid previously prepared before the surgery (Figure 05).

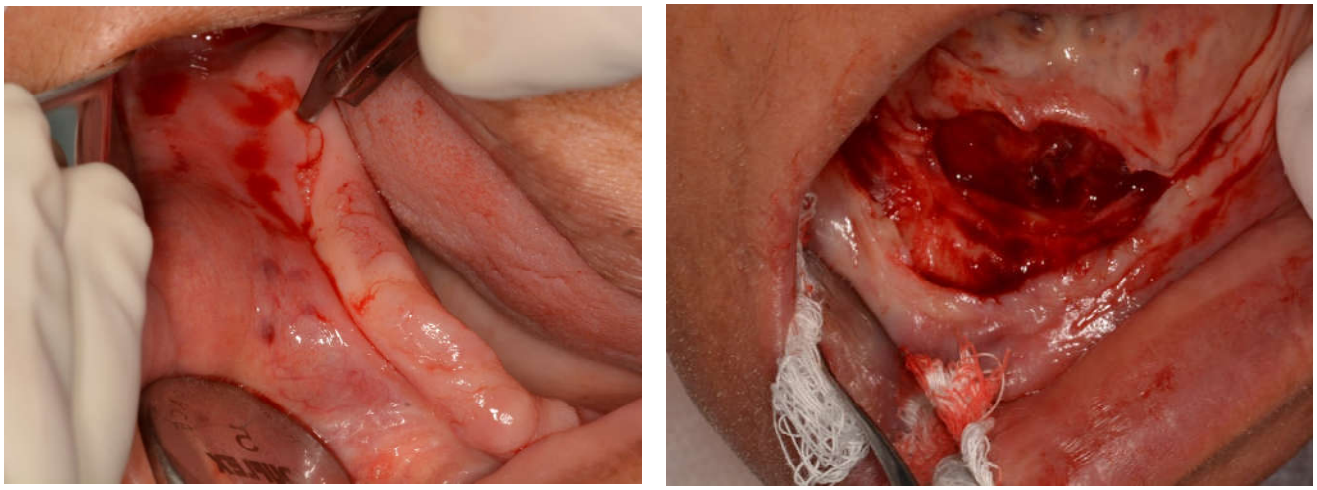


Figure 4. Supracrestal Incision

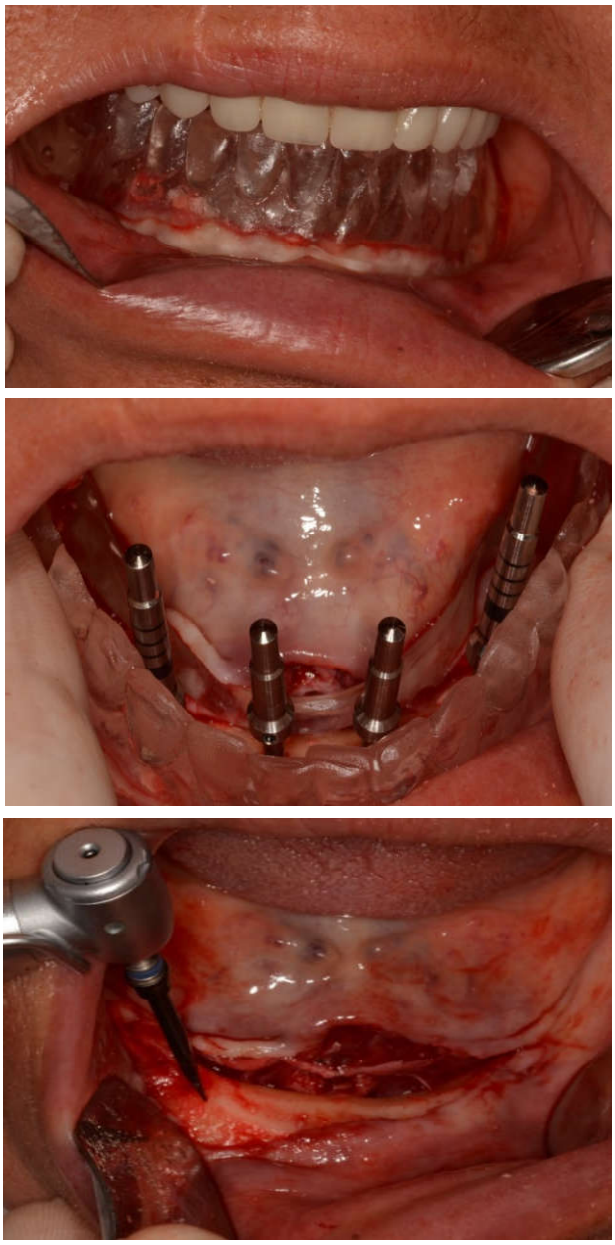


Figure 5. Drilling from a pre-prepared surgical guide

Dividing the space in the bone crest, in the mesial direction, the two most central implants were drilled, distributing the ideal implants.Then, the cutter was used 2mm to 7mm marking of the four perforations and placed guide pins.

These devices were x-rayed to see their relationship with noble structures and the distance between the implants. Confirming the planning and execution, the milling cutters were driven until the marking of the 13mm.

Subsequently, the 3mm milling cutter was used, extending the previous drilling and finalizing the procedure with the Counter Sink cutter for implant platform seating. The implant installation was started with a contra-angle, with a torque of 35Ncm². By obtaining the necessary torque for immediate loading, the implants were finished with the torque ratchet wrench for dental implants (S.I.N. Implant System: São Paulo - Brazil). The mini pillars (S.I.N. Implant System: São Paulo - Brazil) were installed with 2 mm straps, protected by the mini pillars and the area was finally sutured with Nylon 4.0 wire (Procare: São Paulo - Brazil) (Figure 06).

After 24 hours of the surgical procedure, the patient's total prosthesis was captured on implants previously installed (Figure 07). When the provisional components were placed on the mini pillars, the total prosthesis was worn out in the position where the implants were installed. With the aid of Duralay acrylic (Reliance Industries Limited: Mumbai - India), the total denture was attached to the temporary components and then sent to the dental laboratory for flange removal, finishing and polishing. The prosthesis was then installed on the implants and the occlusion adjusted. The patient was advised that is needed a periodic follow up every 6 months of

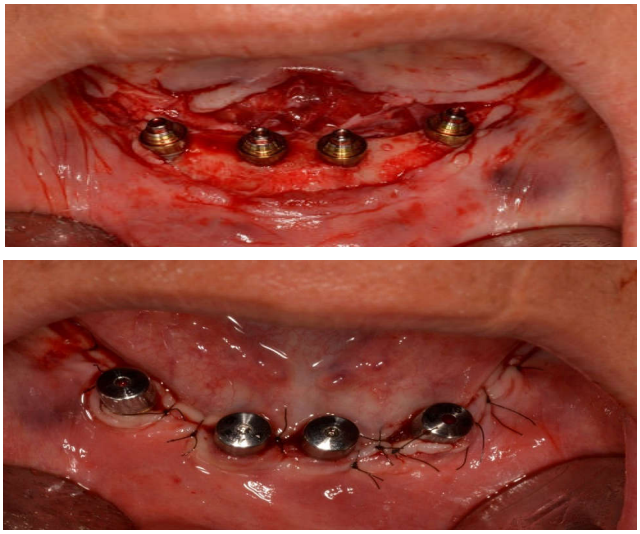


Figure 6. Mini pillars installed and protected

Figure 7. Capture of the prosthesis after 24 hours of the surgical procedure

Figure 8. Healing after 6 months of the procedure

Figure 9. Molding and articulator mounting

the procedures performed, of the need for oral hygiene and an effective plaque control. After 6 months of implant placement, the patient returned to the expected time and needed to verify the healing, and through clinical and imaging follow-up a satisfactory osseointegration, a good positioning and a good adaptation were observed (Figure 08). The patient returned 8 months after the implantation of the implants with immediate loading, and it was possible to perform the molding to make the final prosthesis (Figure 09). The procedure was initiated with the use of the transfer to open tray, joining them with Duraley red resin (TDV: Pomerode - SC, Brazil) respecting the polymerization time. Subsequently, the lower arch was molded with the heavy part of the condensation silicone (YllerBiomateriais: Pelotas - RS, Brazil) and in the mucosal and border region of the implants the light part of the condensation silicone was used, using the elastomer syringe. The upper arch was cast with Alginate (Labordental: Indianópolis - SP, Brazil) followed by casting of plaster (Dentsply: Pennsylvania - USA).

Figure 10. Obtaining occlusal registration in wax and metal test

In the same session, the articulator models were assembled (Bio Art: São Carlos - SP, Brazil) to define the vertical dimension of occlusion, fix reference positions, check mandibular movements and perform study and planning of prosthetic work. After one month, the patient returned to perform the clinical test of the metal bar in order to verify the accommodation of the pillars. The bite registration and the selection of the teeth and the color that will be used in the final prosthesis were also performed (Figure 10). In the following session, the final test of the wax prosthesis was performed and the facial aspects, phonetic tests with opinion and approval by the patient were evaluated. Finally, after 10 months of implant installation, the definitive prosthesis of the type protocol was installed (Figure 11). It could be observed that the application of osseointegrated implants is an excellent pathway for the rehabilitation of edentulous patients, since it has been shown to be an effective therapeutic approach in guaranteeing the function of the stomatognathic system, maintaining healthy alveolar ridge and restoring esthetics. These factors contributed to the increase of satisfaction and improvement of the patient's self-esteem.

Figure 11. Final aspect immediately after permanent prosthesis installation

DISCUSSION

In a world scenario of population aging, oral health has stood out due to the high prevalence of edentulism over the age. The literature has highlighted the association of this factor with dental caries and periodontal disease, which are commonly presented (AGOSTINHO *et al*., 2015). Studies have shown that tooth loss directly affects several functions associated with a person's quality of life, and these impacts are expressed by the reduction of mastication and phonation capacity, as well as nutritional, esthetic and psychological damages.

All these factors influence the reduction of self-esteem, as well as social integration (AGOSTINHO *et al*., 2015; BATISTA *et al*., 2014; GOULART *et al*., 2016). Situations in which the patient of this report was already present. The rehabilitation of these patients, according to Poluha*et al.* (2015), is still considered a challenge for specialists in the field, since there are a number of factors to be analyzed in these situations in order to choose the best form of treatment for each individual case. Faced with prerequisites for the selection of therapy, in this case, it was observed that the dental implant would be the best choice for the patient, due to the large area of edentulism present. In this sense, Schimmel and collaborators (2014) emphasize that dental implants are a great alternative for treatment, mainly due to the patient's achievements provided by this specific therapy, such as greater masticatory efficiency and comfort, besides the psychological favoring. Corroborating with this statement Florentino Filho et al. (2012) guarantee that the high success rate of dental implants has increased with the years of practice of this therapy. This makes this procedure highly predictable in cases such as that of the patient in this report. In cases like this one, 4 to 6 implants in the anterior region between the mental foramen and bilateral distal cantilever are used to replace the posterior elements, as stated Rocha *et al.* (2013). Following this protocol of Branemark, 4 dental implants were used in the case.

Based on the idea that the dental implant aims to replace an element in the oral cavity, these are not enough. After its installation, it is necessary to use prostheses that performed fundamental functions for the stomatognathic system (FLORENTINO FILHO, 2012). In the case presented, other types of prosthesis, such as removable prosthesis (PR) and overdenture types could be used due to the ease of hygiene and maintenance of periodontal health. The first, well known for the possibility of rehabilitation, mainly of spaces of lost elements and of the gingival fibromucosa, presents disadvantages as the difficulty, sometimes, of a good adaptation. A basal area, teeth, remaining roots or dental implants can support the overdenture type, allowing retention and high stability. However, it presents some disadvantages that did not allow its use in this presented clinical case, such as the great index of patients' dissatisfaction with it (SANMARTIN, 2018). However, due to the innumerable advantages presented by the prosthesis type protocol, we chose this technique. These include esthetic, functional, psychological benefits, better cost-effectiveness compared to other therapies presented in the dental market, among others (SILVA *et al*., 2018). Although Branemark*et al.* (1977) state that a significant period is necessary for the insertion of the dental prosthesis over the installed implants is observed in other studies, such as that of Chiapasco*et al.* (1997), that the immediate loading on the implants is efficient when well planned, thus calling itself a protocol type prosthesis. This type of therapy has gained prominence due to some characteristics, such as reduced treatment time and trauma, esthetic, functional and psychological benefits for the patient (AGLIARDI *et al*., 2010).

Studies show some requirements for protocol-type prostheses to be effectively selected as a more favorable therapy. Thus, in order to be successful, it is necessary to have a quantity and quality of osseointegration of the implants, in the prosthetic-surgical planning that favors the distribution of tensions to the bone, as well as the correct and efficient hygiene through the patient [13] (BARCELOS *et al*., 2018; GRIGGS, 2017; MENDES, DAVIES, 2016; OLIVEIRA *et al.,* 2018). Based on these requirements, it was observed that the patient was within the established standards for the insertion of implants and immediate dental prosthesis.

Conclusion

Faced with such elucidations, it is well known that edentulism is a Public Health problem and that it is worth highlighting that more and more studies can approach it as a theme, especially in its therapies. In this sense, this report shows that a well-discussed and well-supported therapeutic approach justifies the use of protocol-type prosthesis with immediate loading. This has been developed and reported in the literature for years, given its approach not only functional but also esthetic. Thus, this therapy can return to the patient the esthetic and functional aspects of the stomatognathic system in such a way that cost-benefit is a criterion of great value, compared to other therapeutic approaches addressed in the literature.

REFERENCES

Agliardi E, Paniagatti S, Cclericò M, Villa C, Malò P. 2010. Immediate rehabilitation of the edentulous jaws with full fixed prostheses supported by four implants: interim results of a single cohort prospective study. *Clin. Oral Impl. Res.* 21(5):459–65.

Agostinho ACMG, Campos ML, Silveira JLGC. 2015. Edentulismo, uso de prótese e autopercepcção de saúde bucal entre idosos. RevOdontolUNESP. 44(2): 74-79.

Barcelos DLZ, Silva JK, Nicoli LG, Paula LGF, Paiva RR. 2018. Incidência de peri-implantite, sucesso e sobrevivência de implantes osseointegrados: estudo retrospectivo. CongIntPes, Ens, Ext 2.

Batista MJ, Lawrence HP, De Sousa MDLR. 2014. Impact of tooth loss related to number and position on oral health quality of life among adults. Health QualLif12(1):1-10.

Borda MG, Perilla NC, Patiño JA, Castelblanco S, Cano CA, Carvajal CD, et al.(2017). Edentulism and its relationship with self-rated health: secondary analysis of the SABE Ecuador 2009 Study. Rev ActaOdontolLat30(2):83-9.

Branemark PI, Hansson BO, Adell R, Breine U, Lindström J, Hallén O, Ohman A. (1977) Osseointegrated implants in the treatment of the edentulous jaw. Experience from a 10-year period. Scand J PlastReconstrSurg16:1-132.

Cano-Gutiérrez C, Borda MG, Arciniegas AJ, Borda CX.(2015).Edentulism and dental prostheses in the elderly: impact on quality of life measured with EuroQol - visual analog scale (EQ-VAS). *Rev Acta Odontol Lat* 28(2):149-55.

Carvalho LF, Melo JRO, Ramos JG, Lima RA, Carvalho FAA. (2019). O impacto do edentulismo na qualidade de vida de pacientes edentulos. Rev ACBO 8(1):40-8.

Chiapasco M, Gatti C, Rossi E, Haelfliger W, Markwalder TH. (1997). Implant-retained mandibular overdentures with immediate loading: a retrospective multicenter study on 226 consecutive cases. Clin Oral Implants Res 8(1):48-57.

De Moraes ER, Rosa EC, De Moraes AB, Silva MAR. (2015). Uso de implantes associados a protocolo com carga imediata em mandíbula. Rev Gestão e Sau12:18-26.

Florentino Filho ATC, Ataíde WS, Pereira AFV. (2012). O implante dentário como uma alternativa para pacientes periodontais: uma revisão de literatura. RevCiênc Saúde 14(1):53-9.

Gomes MWN, Santos MR, Silva MM. (2018). A importância da higienização das próteses implantossuportadas: revisão de literatura. Rev ACBO7(3):210-7.

Goulart MA, Macarevich AC, Hilgert JB, Hugo FN, Celeste RK. (2016). Preocupações sobre a estética dentária com qualidade de vida relacionada à saúde bucal em adultos no sul do Brasil. CiênSaud Colet.

Griggs JA. (2017). Dental impants. Dent Clin North Amer61(4):857-71.

Mendes VC, Davies JE. (2016). Uma nova perspectiva sobre a biologia da osseointegração.RevAssoc Paul CirDent70(2):166-71.

Oliveira AD, Vermudt A, Ghizoni JS, Pereira JR, Pamato S. (2018). Consequências do fumo na osseointegração de implantes dentários. J Res Dent6(3):69-79.

Poluha RL, Melo Neto CLM, Sábio S. 2015. Prosthetic rehabilitation using association of total and implant-supported total denture (Brånemark protocol) – case report. Rev Sul-Bras de Odont12(3):316-22.

Rivas JE, Sánchez SB, CiódaroAR. 2018. Frecuencia y características de hallazgos y variacionesóseasenradiogra fíaspanorámicas de personas conedentulismo total. Dialnet Univ Odont37(78).

Rocha SS, Souza DR, Fernandes JMA, Garcia RR, Zavanelli RA. 2013. Próteses totais fixas tipo protocolo bimaxilares. Relato de caso. RevOdontolBrasCentral 21(60):21-7.

Sanmartin RC. 2018. Prótese total tipo protocolo e *overdenture* com sistema de travamento MK1 na região da maxila: revisão de literatura. [Dissertação]. Porto Alegre: Universidade Federal do Rio Grande do Sul.

Schimmel M, Srinivasan M, Herrmann FR, Müller F. (2014). Loading protocols for implant-supported overdentures in the edentulous jaw: a systematic review and meta-analysis. The Internat J Oral& Maxillofacial Implants 29:271-86.

Silva ET, Oliveira RT, Leles CR. (2015). O edentulismo no Brasil: epidemiologia, rede assistencial e produção de próteses pelo Sistema Único de Saúde. Actas de S Colet9(3):121-34.

Silva MCVS, Vanderlei JMTMM, Araújo ALMS, Pires MP, Rodrigues TSA, Brasileiro WF. (2018). Alternativa para reabilitação protética em desdentados totais: sobredentadura e prótese total fixa, quando indicar? – revisão de literatura. *RevCam Sab* 4(5):71-83.

****