REVISTA CIÊNCIAS e ODONTOLOGIA

IMMEDIATE PROSTHETIC REHABILITATION TREATMENT IN PATIENT WITH DENTOPERIOALVEOLAR INVOLVEMENT: A CLINICAL CASE REPORT

TRATAMENTO REABILITADOR PROTÉTICO IMEDIATO EM PACIENTE COM COMPROMETIMENTO DENTOPERIOALVEOLAR: UM RELATO DE CASO CLÍNICO

Jefferson Pires da Silva Júnior[1,2], Isadora Bacelar Veloso[2], Pedro Paulo Lopes de Almeida[3], Flávio Lima do Amaral Silva[1], Claudio do Carmo Gonçalves[4], Joyce de Figueiredo Meira[4]

1 Professor of the course in dentistry at Nilton Lins University.
2 Dental prosthetic specialist at RC Institute/FAIPE.
3 Periodontal specialist at Blauro Cardoso de Mattos Higher Education Institute/FASERRA.
4 Professor of the specialization course in prosthodontics and restorative dentistry at RC Institute/FAIPE.

Abstract

Introduction: The main causes of tooth loss are alveolar trauma and pathologies related to dental caries or periodontal diseases. As a treatment measure, only focus on missing dentition, focus on how missing dentition at only lost level. The immediate denture technique allows the reestablishment of absent functions quickly, because the prosthesis is installed soon after the surgery. **Objective:** This clinical case describes the fabrication of removable prostheses immediately in a patient with compromised involvement. **Case report:** A 63 years old, male, asthmatic, and diabetic type II patient, attended the dental clinic complaining of pain in the upper arch during fitting of the maxillary prosthesis, speech and swallowing problems, in addition to dissatisfaction. During the clinical examination, prosthetic maladaptation was noted on the maxillary arch, as well of presence of ulcerations, suggestive of hyperplasia. In the lower mandibular arch, the absence of posterior teeth was noted in both hemiarchs and the presence of teeth 33, 32, 31 and 41, all with clinical and radiographic impairment. Based on the clinical and radiographic aspects and patient's conditions, conventional and immediate complete dentures were treatment planned for the maxillary and mandibular arches, respectively. **Conclusion**: No complications were present after delivery, and positive esthetics and functional outcomes were achieved.
Keywords: dental prosthesis design, dental prosthesis, denture, complete.

Resumo

Introdução: As principais causas de perda dentária são traumas alveolares e patologias relacionadas à cárie dentária ou doenças periodontais. Como medida de tratamento, é necessário concentrar-se apenas na dentição perdida, focando no nível de perda. A técnica de prótese imediata permite o restabelecimento rápido das funções ausentes, pois a prótese é instalada logo após a cirurgia. **Objetivo:** Este caso clínico descreve a fabricação de próteses removíveis imediatas em um paciente com comprometimento sistêmico. **Relato de caso:** Paciente gênero masculino, de 63 anos, asmático e diabético tipo II, compareceu à clínica odontológica queixando-se de dor na arcada superior durante o ajuste da prótese maxilar, problemas de fala e deglutição, além de insatisfação. Durante o exame clínico, foi observada má adaptação protética na arcada maxilar, bem como a presença de ulcerações, sugestivas de hiperplasia. Na arcada inferior, foi observada a ausência de dentes posteriores em ambos os hemiarcos e a presença dos dentes 33, 32, 31 e 41, todos com comprometimento clínico e radiográfico. Com base nos aspectos clínicos e radiográficos e nas condições do paciente, foi planejado um tratamento com próteses completas convencionais e imediatas para as arcadas maxilar e mandibular, respectivamente. **Conclusão:** Não houve complicações após a entrega das próteses, e foram obtidos resultados estéticos e funcionais positivos.
Palavras-Chave: planejamento de prótese dentária, prótese dentária, prótese total.

ENVIADO: 17/06/2024; ACEITO: 20/09/2024; REVISADO: 22/12/2024

Contato: jefferson.junior@uniniltonlins.edu.br

Introduction

Edentulism is a problem without a defined cause that affects a large part of the population. This loss can be caused early or gradually.[1] Tooth loss occurs due to several factors, among its main causes are: dentoalveolar trauma and pathologies related to dental caries or periodontal diseases.[2] Access by Brazilians to basic forms of treatment is vast, however, values and places where access is found, make it difficult for patients to resolve

conservative treatments, resulting in the search for radical therapies that are easier for the general public.[3]

The forms of treatment focus on the rehabilitative measure, characterized by restoring the missing dentition not only at an aesthetic level but also the lost functional parameters.[4] Dental prostheses are appliances intended for structural replacement, which can be fixed or removable, adapting to the tissue, restoring teeth, volume, phonation, and consequently acting to improve social interaction.[4.5] The artifice of using prostheses is presented as a therapy of choice for cases of multiple absences, which can be retained in a mucous, dental or supported implant way.[5]

The use of dental prostheses returns support structures, improving aesthetic and functional standards, restoring characteristics of the stomatognathic system.[5] They can be classified as: total, when all missing teeth are restored in the arch in an edentulous patient; and partial, used to restore some missing teeth in an arch, made of metallic alloy and modified resins.[6.7] It is worth mentioning that they can be subclassified into removable, allowing their removal easily and fixed, which are cemented or screwed onto teeth, cores or implants.[8.9]

For functional reasons, the use of prostheses after surgical procedures can be considered in order to restore lost parameters, which are called immediate prostheses.[10.11] The immediate technique allows the restoration of absent functions quickly, installed right after the surgery.[11] However, relining in these cases must be observed due to the gradual process of tissue remodeling resulting in future prosthetic misfit.[12]

The aim of this article is to report a clinical case of oral rehabilitation using immediately removable prostheses in a patient with severe dental impairment.

Case report

A 63-year-old male patient, asthmatic and type II diabetic, attended the dental clinic of a Higher Education Institution with periodic examinations and medical release, complaining of pain in the upper arch during the fitting of the prosthesis, speech and swallowing problems, in addition to the aesthetic dissatisfaction with his smile. Procedures were started after signing of the free and informed consent form. During the anamnesis, the patient reported that he had had the maxillary denture made approximately 3 months ago in a Basic Health Unit. After delivery, he did not return for follow-ups due to the closure of the unit.

In the extraoral clinical examination, no facial alterations worthy of further observation were noted. During the patient's speech, difficulty in pronunciation and limited facial movement were noticed (figure 1). In the intraoral examination, it can be highlighted in the maxillary arch: prosthetic misfit, presence of ulcerations and hyperplasia in the bottom of the vestibule in the anterosuperior region, absence of all teeth in the arch and enlargement of the tuberosities. In the mandibular arch, it was noted the absence of posterior teeth in both hemiarchs, the presence of teeth 33, 32, 31 and 41, unsatisfactory restorations, and knife edge alveolar ridge (figures 2 and 3).

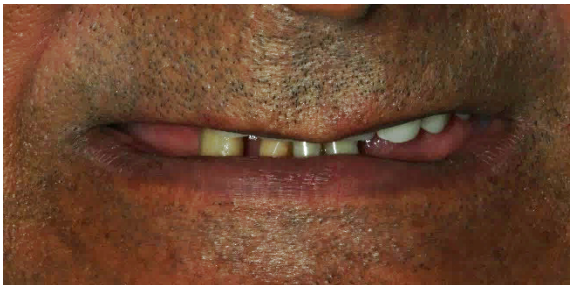

Figure 1: Initial clinical appearance of the smile showing facial limitation.

Figure 2: Intraoral clinical appearance.

Figure 3: Hyperplasia in the anterosuperior area.

Based on the characteristics presented during the clinical examination, a panoramic radiograph was requested. It showed a periapical lesion with an aspect similar to hypercementosis in 33 and radiolucent thickening at the root apex of 31, 32 and 41 (figure 4). In view of the clinical and radiographic aspects of the case, together with the patient's conditions, the reline of the upper prosthesis, surgical removal of the hyperplasias, for later extraction of the compromised teeth and fabrication of new removable prostheses were chosen: conventional in the upper arch and immediate in the lower arch.

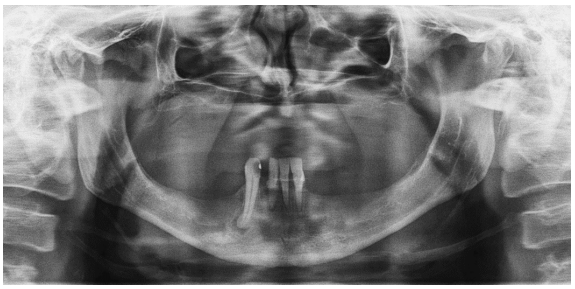

Figure 4: Panoramic X-ray.

According to the planning, the irregularities of the old prosthesis were initially removed with a Maxcut drill. Then, with the aid of provisional material (Temporary Soft, TDV Dental, Pomerode, SC, Brazil) relining was carried out on an urgent basis in order to assist in the first tissue conditioning, allowing speech and improved eating (figures 5 and 6). After 10 days of follow-up, no hyperplastic decrease was found, so the hyperplastic areas were surgically removed through clamping and incision with a #15 scalpel blade. After removal, they were immersed in a 10% formaldehyde solution and sent to the histopathological, with a diagnostic hypothesis of reactive fibroepithelial hyperplasia, confirmed through the histopathological report by the presence of epithelium coated with areas of acanthosis, chronic inflammatory infiltrate, fibroblastic proliferation (figures 7 and 8).

Figure 5: Soft material for relining.

Figure 6: Appearance of the smile after relining.

Figure 7: Surgical removal of the hyperplasias.

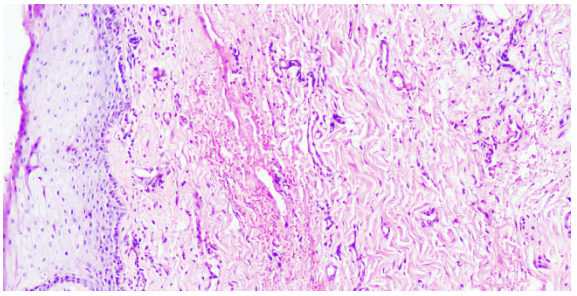

Figure 8: Section of the histopathological slide 200X.

At the end of the 10-day period, the suture was removed, showing an adequate scarring aspect

for the continuation of the prosthetic treatment (figure 9). In the following session after 20 days, the prosthetic steps began with the selection and individualization of the perforated trays using peripheral wax (Imodonto, Pirassununga, SP, Brazil) and cotton, with subsequent anatomical molding to obtain the mold using regular setting alginate (Jeltrate Dustless, Dentsply Sirona, New York, United States), cast in special type IV plaster (Durone IV, Dentsply Sirona, New York, United States) for making the upper and lower models. Due to the quality of the molds obtained, sequences intended for the working model were chosen (figures 10 and 11). The lubrication of the models was carried out using lubricant for plaster, and with the aid of wax 7 (Polidental, Cotia, SP, Brazil) the upper and lower work models were individualized by making reliefs relieves in the areas without support. Soon after, the record bases were made using self-polymerized acrylic resin (Jet, Classic Dental Articles, Campo Limpo Paulista, SP, Brazil), leaving free the anterior area corresponding to the lower teeth present in the arch (figures 12 and 13).

Figure 9: Surgical removal of the hyperplasias.

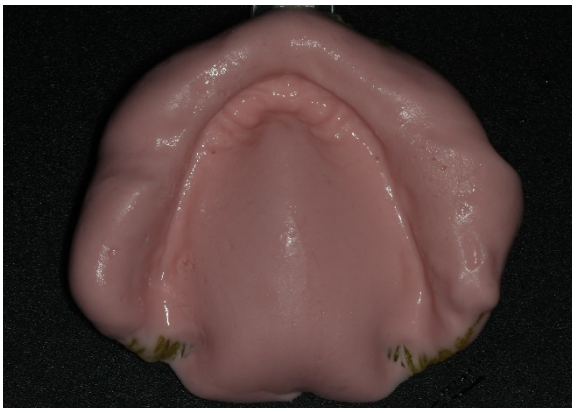

Figure 10: Impression of the upper arch.

Figure 11: Mold Impression of the lower arch.

Figure 12: Maxillary record base.

Figure 13: Mandibular record base.

Once the record bases were made, the superior orientation plane was carried out with the aid of wax 7 (Polidental, Cotia, SP, Brazil) folded following the 1cm markings as a guide. Then, the height, the buccal contour in the anterior region were adjusted, later using the Fox ruler, the parallelism of the bipupillary line and the Camper's plane was confirmed, finalizing the adjustments with the opening of the buccal corridor with subsequent adjustments in the inferior plane. Once the adjustments were complete, the upper orientation plane was fixed to the bite fork of the semi-adjustable articulator (SAA) using condensation silicone from the mixture of heavy mass and the catalyst (Optosil Comfort Putty, Kulzer, Tokyo, Japan). The plane fixed in the mouth was properly

positioned and the upper facebow was registered followed by mounting in SAA.

Soon after, the orientation plane was positioned in the mouth again and fixed next to the inferior plane and with the aid of the lecron, guided markings were made with dental floss on the reference lines: canine; high and low of the smile. Subsequently, the rollers were fixed in the mouth using clamps and positioned on the models fixed on the articulator. The articulator was positioned upside down to assemble the lower one in SAA. Next, the color of the teeth was selected along with the patient and sent for assembly of the artificial teeth, leaving the anterior area absent (figure 14). In the following session, after approval by the patient, in order to obtain a closer reproduction of the support structures, the artificial teeth were vaselined and a working mold was made with condensation silicone (Optosil Comfort Putty, Kulzer, Tokyo, Japan) by the closed-mouth technique. Once the molds were obtained, they were sent back to the laboratory for acrylization, asking the laboratory to extract teeth 32, 31, 41 and 42 from the lower model and add them to the assembly of teeth, also informing the selected gum color (figures 15 and 16).

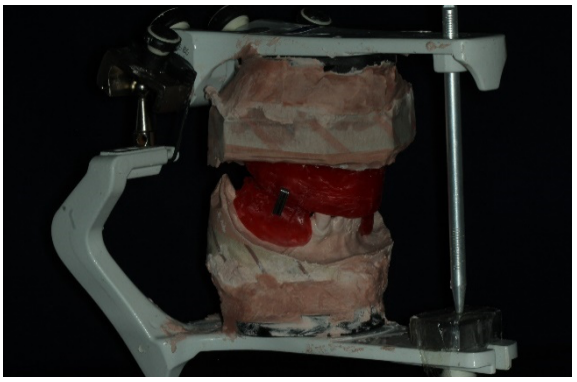

Figure 14: Mounting on SAA.

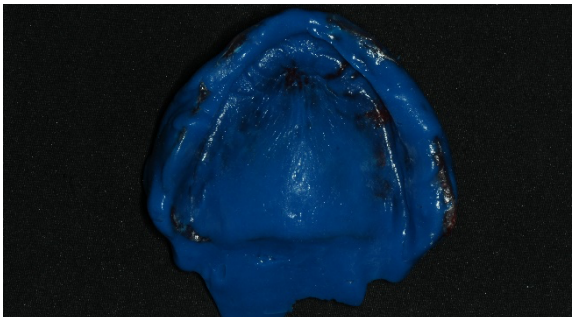

Figure 15: Upper working template.

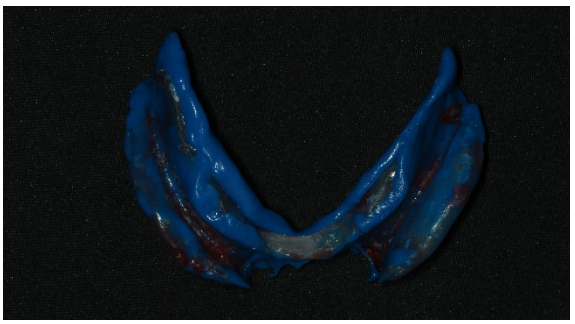

Figure 16: Lower working model.

In the next session,with the prostheses already made, the removal of teeth 33, 32, 31 and 41 began. Intraoral antisepsis was performed with 0.12% chlorhexidine digluconate through mouthwash for 1 minute, extraorally topically with 2% chlorhexidine digluconate and subsequent assembly of the operative field. Through the infiltrative technique, the anesthetic salt 2% lidocaine associated with epinephrine was administered at a concentration of 1:100,000 in the nerves: mental, lingual and incisor.

Once the analgesic effect was achieved, an intrasulcular incision was made without opening the flap. In order to preserve bone structures, removal was performed using the first technique with forceps 151. After extractions, the ridge was regularized with a bone file, abundant irrigation with 0.9% saline solution followed by alveolar curettage with Lucas curette and synthesis with simple stitches using 4-0 nylon thread. For postoperative care, an anti-inflammatory (nimesulide 100mg) was prescribed, 1 tablet every 12 hours, for 3 days, and analgesic (sodium dipyrone 500mg), 1 tablet every 6 hours, for 2 days (figures 17 and 18).

Figure 17: Previous surgical appearance.

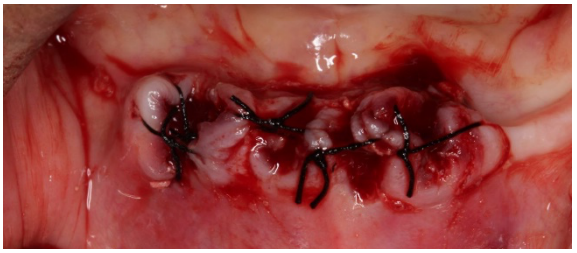

Figure 18: Synthesis with single points.

At the end of the surgical stage, after cleaning the operative field, the amount of powder and liquid was proportionally measured according to the manufacturer, to be mixed in the paladon pot of the reliner material (Soft provisório, TDV Dental, Pomerode, SC, Brazil). When presenting at the end of the fibrillar phase, the content was placed on the internal area of the lower prosthesis using a #36 spatula with subsequent adaptation in the mouth to act as a guide in healing and allow the patient to swallow (figure 19). The relined prosthesis was removed to remove excesses with curved iris scissors and installed in the mouth again. The suture was removed after 7 days, and another 2 relining sessions were performed in an interspersed period of 10 days, totaling 3 sessions in 30 days. In addition, the patient was instructed on the need for relining after complete healing, which would vary due to the systemic condition.

Figure 19: Installation of the immediate prosthesis.

The patient was followed up on a monthly basis for the necessary care and occlusal adjustments, in addition to reinforcing the hygiene habits of the new prostheses in each session. After 60 days, he complained of prosthetic ill-fitting, and as planned, based on the healing response of the ridge, a definitive reline was chosen. In order to obtain a closer reproduction of the structures, the patient's own prostheses were used, taking impressions using the closed-mouth technique with fluid condensation silicone (Optosil Comfort Putty, Kulzer, Tokyo, Japan). Once the molds were obtained again, they were sent back to the laboratory for relining using the indirect technique. With the acrylization finished, the patient returned for a new prosthetic installation, this time, highlighting total adaptation to the tissues and acceptable retentivity for the case, occlusal adjustments were made with maxicut drills in the areas demarcated with carbon until distribution of the stitches, the patient has no complaints and is being followed up (figure 20).

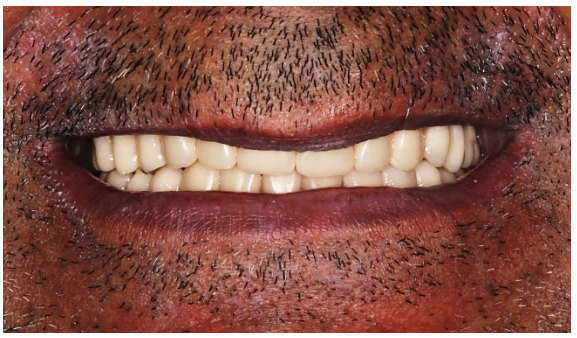

Figure 20: Final clinical appearance.

Discussion

The prosthetic impact on quality of life is positive when we compare longitudinal aspects, the population's positive responses to the use of dental prostheses, as well as the high market demand for professionals in this area, showing that there are adequate clinical resolutions for tooth loss.[13] Edendulism is still considered a worldwide concern, either through early or gradual tooth loss.[14] The world's population suffers from this disease over the generations, despite the advancement of preventive measures, there is still a long way to go when it comes to the longevity of the dental organ.[15]

Socioeconomic factors are considered the greatest influence when choosing dental treatments, whether in the public or private sphere.[16] The population's lack of access to Petrorossi et al. (2019)[17] it also directs a concern of professionals in the public network regarding dental procedures. Preventive measures are routinely taken, enabling different actions and a new view of people regarding dental prevention.[18] In this clinical case, the patient's clear concern about the use of

prostheses was noted, as he lives in the peripheral area of the city, with low economic power and difficult access to health care networks aimed at oral rehabilitation.

Dental compromise can occur in various ways, among which the following stand out: fractures; injuries with difficult resolutions; and loss of bone support.[19.20] When the subject is rehabilitation in toothless patients,Bernardo et al. (2015)[21] relate these factors to the difficulty of prosthetic restoration in an area with little clinical indication, resulting in treatments with unfavorable prognoses. In the reported case, there was no indication of removable partial dentures supported on the teeth of the anterior region in the mandible, since the dental elements already presented loss of support bone structure, there was endodontic indication, gingival retraction and tooth mobility, resulting in a greater commitment, indicating tooth removal.

The immediate complete denture for Puca et al. (2020)[11] has the same advantages compared to the conventional one, it is performed through a reverse planning so that at the time of surgery the prosthesis is ready to be adapted in the mouth, helping in tissue remodeling and allowing the return of the masticatory act. Thinking about the absence of teeth for the moment of mastication, impairing the functioning of the stomatognathic system, in this report, we opted for the indication of surgical removal at the same time as the prosthetic installation. Goiato et al. (2014)[10] they also reinforce that it is a favorable technique, of acceptable execution, with an adequate margin of success of the treatment.

In cases of prosthetic rehabilitation after surgical procedures, the need for prosthetic relining should be periodically evaluated with the patient, as the bone remodeling process is slow and the healing response occurs gradually, varying according to the profile of each patient.[12] In the reported clinical case, monthly follow-ups were carried out, there was an indication of relining, at first using soft material as a temporary conditioner to later use a definitive product. After 60 days, the patient returns again for a new molding and definitive relining using the laboratory technique. For Silva Júnior et al. (2023)[12] it is Carvalho Junior et al. (2020)[22] materials with resilient characteristics are ideal for conditioning, as they temporarily allow tissue adaptation, in addition to greater comfort during masticatory activities.

Preventive care, hygiene habits, maintenance and periodic follow-ups according to Papadiochu et al. (2018)[23] are necessary in order to establish durability criteria for the prosthetic piece, allowing greater comfort. In the reported clinical case, the patient did not obtain previous follow-ups after the delivery of the old upper prosthesis, in addition to the absence of regularization in the peripheral sealed area, responsible for the discomfort and gradual ulcerations due to use. Parts that are poorly adapted or in adverse conditions that impair aesthetics and function must be reinserted into normality profiles to avoid possible complications that may arise over time.[13.21]

The choice for immediate treatment in this case is guided by 2 main factors: aesthetics and function. Despite the need for relining using an immediate technique, the same can also occur in rehabilitative treatment with a delayed conventional total prosthesis made only after the 2-month post-surgical healing and bone remodeling period, as the bone undergoes a constant remodeling process. tissue.[12,14,21] However, given the age and conditions presented by the patient, such as: absence of vertical dimension; difficulty speaking and swallowing; painful symptoms; in addition to aesthetic dissatisfaction, it makes the conventional procedure a less viable option.

In this report, it is clear that opting for conventional treatments does not reflect a mistaken option, but rather, a unique and differential look at the patient's general conditions. Comparing the delayed healing response of approximately months after surgery with the immediate one, to make the beginning of molding accessible, allows the patient to be unnecessarily subjected to all the complaints mentioned for a longer period. This situation can be avoided, as the literature defends not only the technique but also reintervention with relining materials if necessary.[10,12,14] However, despite being more simplified from the moment of molding and having a lower indication of reinterventions over the long term, term, in both conditions it is possible to perceive the advantages and disadvantages from a clinical/aesthetic/functional point of view between the techniques, with the choice being at the discretion of the professional.[13,15]

It is worth mentioning that, in the patient's words, since the installation, there was an adequate adaptation of the prostheses. This condition is evident during swallowing and especially when speaking. Even so, even with the period of bone

reabsorption occurring at the post-surgical site, the patient to date has not presented any complaints regarding prosthetic retention, demonstrating the effectiveness of the proposed treatment, as there was sufficient preservation of the ridge for the formation of the retentive vacuum.

Conclusion

The clinical resolution using immediate complete denture was, therefore, satisfactory in the aesthetic/functional return of the present case, meeting the expected expectations, without intercurrences or complications. However, the need for reinterventions in cases of prosthetic misfit as a result of the local bone resorption process, due to extraction performed prior to prosthetic installation, must be evaluated.

References

1. Carvalho LF, Melo JRO, Ramos JG, Lima RAL, Carvalho FAA. O impacto do edentulismo na qualidade de vida de pacientes edentulous. RvACBO. 2019; 1(8): 40-48.
2. Araújo EF, Silva MCVS, Araújo WF, Araújo PF, Silva RA, Araújo MF. Edentulismo a partir de uma análise epidemiológica. Saúdecoletiva. 2021; 11(61): 1-5.
3. Silva ET, Oliveira RT, Leles CR. O edentulismo no Brasil: epidemiologia, rede assistencial e produção de próteses pelo Sistema Único de Saúde. Actas de Saúde Colet. 2015; 9(3): 121-34.
4. Saeed F, Muhammad N, Khan AS, Sharif F, Rahim A, Ahmad P, et al. Prosthodontics dental materials: from convencional to unconventional. Mater Sci Eng C Mater Biol Appl. 2020; 106: 110167.
5. Azevedo JS, Azevedo MS, Oliveira LJC, Correa MB, Demarco FF. Uso e necessidade de prótese dentária em idosos brasileiros segundo a Pesquisa Nacional de Saúde Bucal (SBBrasil 2010): prevalências e fatores associados. Cad Saúde Pública. 2017; 33(8): e00054016.
6. Campbell SD, Cooper L, Craddock H, Hyde TP, Nattress B, Pavitt SH, Seymour DW. Removable partial dentures: the clinical need for innovation. J Prosthet Dent. 2017; 118(3): 273-80.
7. Nascimento JE, Magalhães TA. Souza JGS. Sales MSM, Nascimento CO, Júnior CWXL, et al. Associação entre o uso de prótese dentária total e o tipo de serviço odontológico utilizado entre idosos edêntulos totais. Ciênc Saúde Coletiva. 2019; 24(9): 3345-56.
8. Bohnenkamp DM. Removable partial dentures: clinical concepts. Dent Clin North Am. 2014; 58(1): 69-89.
9. Gomes APA, Barbosa CGC, Melo-Silva CL, Melo-Silva TCF, Freitas RX, Carvalho CF, et al. Prótese fixa sobre dentes e implantes: relato de caso. Res Soc Dev. 2021; 10(12): e190101220167.
10. Goiato MC, Santos DM, Medeiros RA, Sônego MV. Técnicas de confecção de prótese total imediata mucossuportada. Rev Odontol Arac. 2014; 35(1): 67-72.
11. Puça DLT, Fernandes WCC, Caldeira FID, Pigossi SC, Rodriguez LS. Reabilitação bucal com prótese total imediata: um recurso estético e funcional: relato de caso. Arch Health Invest. 2020; 9(6): 517-21.
12. Silva Júnior JP, Veloso IB, Galvão LF, Almeida PPL, Pereira TS, Gonçalves CC, et al. Temporary relining in removable prosthesis for corrective and conditioning purposes: a case report. Adv Res. 2023; 24(6): 78-83.
13. Nepomuceno NVA, Machado CTA, Lima LO, Ribeiro CMB, Vanderlei AD. Reabilitação protética: sua influência na qualidade de vida. RcAcBO. 2019; 28(1): 9-15.
14. Santos TVMS, Silva FB, Aguiar FM, Silva Júnior JP, Oliveira AT. Reabilitação protética convencional após remoção cirúrgica de hiperplasia fibrosa: relato de caso. Rev Odontol Arac. 2021; 42(1): 24-32.
15. Milagres CS, Tôrres LHN, Neri AL, Souza MLR. Condição de saúde bucal autopercebida, capacidade mastigatória e longevidade em idosos. Ciênc saúde colet. 2018; 23(5): 1495-506.
16. Silva-Junior MF, Sousa ACC, Batista MJ, Sousa MLP. Condição de saúde bucal e motivos para extração dentária entre uma população de adultos (20-64 anos). Ciênc Saúde Colet. 2017; 22(8): 2693-702.
17. Petrorossi CF, Freire AS, Carvalho ALM, Santos PR, Souza CVS, Vedovello-Filho FA, et al. Avaliação do acesso e qualidade dos serviços odontológicos. Revista Ensaios Pioneiros. 2019; 3(2): 1-9.

18. Fadei CB, Bordin D, Santos CB, Carvalho DR, Moimaz SAS. Users' satisfaction with the public dental service: the discovery of new patterns. Cad saúde colet. 2019; 27(2): 172-81.
19. Bitencourt SB, Cunha AIO, Oliveira DWR, Jardim ATB. Abordagem terapêutica das fraturas dentárias decorrentes do traumatismo dentário. Rev Odontol Arac. 2015; 36(1): 24-9.
20. Carneiro MC, Costa DA, Chicora PGV, Endo MS, Veltrini VC. Abordagem endodôntica não cirúrgica em extensa lesão periapical: relato de caso. Arch Health Invest. 2020; 9(6): 513-6.
21. Bernardo AA, Medeiros MV, Spegel R, Veronez FC, Trauth KGS. Diagnóstico e planejamento de tratamento em desdentados. Rev Odonto Univ Cid São Paulo. 2015; mai-ago.; 27(2): 142-9.
22. Carvalho Júnior H, Carvalho VHM, Basting RT. Hardness, compressive strength and resilience of complete denture lining materials: an in situ study. RGO. 2020; 68: e2020004.
23. Papadiochu S, Polyzois G. Hygiene practies in removable proshodonticas: a systematic review. Int J Dent Hyg. 2018 may.; 16(2): 179-201.