WHAT IS THE IMPACT OF USE OF "CRACK" IN THE ORAL REHABILITATION WITH DENTAL IMPLANTS: A PUBLIC HEALTH PROBLEM

QUAL O IMPACTO DO USO DO "CRACK" NA REABILITAÇÃO ORAL COM IMPLANTES DENTÁRIOS: UM PROBLEMA DE SAÚDE PÚBLICA

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ABSTRACT

A 43-year-old male patient, a former crack user, sought total oral rehabilitation with dental implants after years of substance abuse, culminating in extensive tooth loss and gum inflammation. The patient reported generalized pain and difficulty eating. Clinical examination revealed the absence of several dental crowns and signs of xerostomia. Imaging tests confirmed the need for extraction of residual roots and the installation of implants. The surgeries were performed in two phases, followed by a careful healing and osseointegration process, which led to a successful rehabilitation, providing the patient not only with functional recovery, but also with a positive impact on his self-esteem and quality of life. The importance of understanding the challenges of dental rehabilitation in former drug users, highlighting the need for multidisciplinary care that not only treats physical damage, but also contributes to the patient's psychosocial recovery. The study highlights the urgency of developing prevention and treatment strategies for oral health problems among crack users, recognizing the interconnections between health, social vulnerability, and drug addiction. Despite the limitations of the study, the case report offers valuable insights and encourages further investigation into the effects of drug use on oral health and its implications for dental practice. Oral rehabilitation, with a focus on dental implants, is presented as a fundamental route for social reintegration and health promotion in individuals affected by addiction. Although psychoactive drugs affect stomatognathic physiology, it is unclear how their abuse impacts osseointegration. However, they highlight that oral rehabilitation with dental implants is essential for the social reintegration of the individual, which can motivate them to abandon drug use and improve their oral and general health.

KEYWORDS: Dental implants; crack cocaine; osseointegration.

RESUMO

Paciente masculino, 43 anos, ex-usuário de crack, buscou reabilitação oral total com implantes dentários após anos de abuso de substâncias, culminando em extensa perda dentária e inflamação gengival. O paciente relatou dor generalizada e dificuldade para comer. O exame clínico revelou ausência de várias coroas dentárias e sinais de xerostomia. Os exames de imagem confirmaram a necessidade de extração de raízes residuais e instalação de implantes. As cirurgias foram realizadas em duas fases, seguidas de um cuidadoso processo de cicatrização e osseointegração, o que levou a uma reabilitação bem-sucedida, proporcionando ao paciente não apenas recuperação funcional, mas também impacto positivo em sua autoestima e qualidade de vida. A importância de compreender os desafios da reabilitação dentária em ex-usuários de drogas, destacando a necessidade de um atendimento multidisciplinar que não trate apenas os danos físicos, mas também contribua para a recuperação psicossocial do paciente. O estudo destaca a urgência do desenvolvimento de estratégias de prevenção e tratamento para problemas de saúde bucal entre usuários de crack, reconhecendo as interconexões entre saúde, vulnerabilidade social e dependência química. Apesar das limitações do estudo, o relato de caso oferece insights valiosos e incentiva investigações mais aprofundadas sobre os efeitos do uso de drogas na saúde bucal e suas implicações para a prática odontológica. A reabilitação oral, com foco em implantes dentários, é apresentada como uma rota fundamental para a reintegração social e promoção da saúde em indivíduos afetados pela dependência. Embora as drogas psicoativas afetem a fisiologia estomatognática, não está claro como seu abuso impacta a osseointegração. No entanto, eles destacam que a reabilitação oral com implantes dentários é essencial para a reintegração social do indivíduo, o que pode motivá-lo a abandonar o uso de drogas e melhorar sua saúde bucal e geral.

PALAVRAS-CHAVE: Implantes dentários; crack; osseointegração.

1. INTRODUCTION

Crack is an illicit, addictive drug with a powerful stimulant effect on the central nervous system. It is produced from cocaine, sodium bicarbonate or ammonia, and water. It is a narcotic that comes in solid form and can be smoked in pipes and even mixed with other illicit drugs[1]. Among other reasons, it became popular because it is a low-cost drug. In addition to have direct negative consequences for the individual's general health, continued use of this drug is associated with several types of transmissible diseases (sexually transmitted diseases and hepatitis) and social,

environmental, and behavioral aspects in the lives of users, which have a serious impact on their quality of life[1,2].

The systemic impact of continued use of this drug is directly linked to cardiac and respiratory problems and leads to a decrease in the user's immune response[2]. Locally, in the stomatognathic system, there is vasoconstriction, xerostomia, necrosis and ulceration of the mucosa and gums, occurrence of angular cheilitis and candidiasis[3]. The use of cocaine and crack has been linked to an increase in the rate of cell proliferation in the cells of the oral mucosa, gingival lesions and aggressive periodontitis[4,5].

It is coherent to assume that the oral mucosa is a possible target, since the main form of crack consumption is through smoking. The mechanism supporting this assumption is based on local effects, such as heat from the smoke, harmful effects of the chemical content of the drug, and gingival friction. Even though studies have addressed the bodily effects of high crack consumption, there is still minimal knowledge of its harmful effects on oral mucosal cells at the cellular and molecular level and its effects on the osseointegration of dental implants[6].

That said, we can state that, in Brazil, crack use is a public health problem. Approximately 1% of the population uses crack[3]. These users often find themselves in such a precarious situation and dependent on the drug that they end up completely neglecting their oral and general health, which leads to periodontal disease, cavities and thus tooth loss. Thus, many patients require oral rehabilitation to restore function, aesthetics and quality of life[3,4,5,7,8].

Faced with a growing public health problem with little scientific reporting [9,10], this study aims to report the case of a former crack user who required total rehabilitation with tooth-supported implants.

2. CLINICAL CASE REPORT

Patient male, 43 years old, came to us at the HIGA DENTAL CARE clinic, located in the city of São Paulo - SP in April 2018. He reported generalized pain in the upper and lower teeth and extreme difficulty in eating. During the clinical examination, the absence of dental crowns of teeth 14, 13, 12, 11, 21, 22, 25, 26, 34, 33, 32, 31, 41, 42, 43 and 44 was observed, leaving only residual roots, healthy teeth 38, 45 and 48, in addition to inflammation of the gums and mucous membranes with spontaneous bleeding (Figure 1-A). Patient reports a sensation of dry mouth (xerostomia). A complete anamnesis was carried out in which the patient described continuous use of a drug called crack for many years, which he stopped the use in 2016 (up until the date of the consultation he was no longer using it).

During the consultation, imaging tests were requested, including a total maxillary and mandibular computed tomography, panoramic imaging and a blood test. The first imaging test was a panoramic radiograph that showed apical lesions in teeth 14, 13, 12, 22, 25, 26, 34, 33, 32, 31, 41, 42, 43 and marginal bone loss of approximately 2 to 3 mm. Computed tomography (CT) revealed the impossibility of endodontic treatment due to root exposure in the middle third, decreased horizontal bone volume and the need for extraction of all teeth. However, 2 surgeries were scheduled for extraction of the residual roots, installation of implants and grafting in the surgical beds, with the first surgery being performed in June 2018.

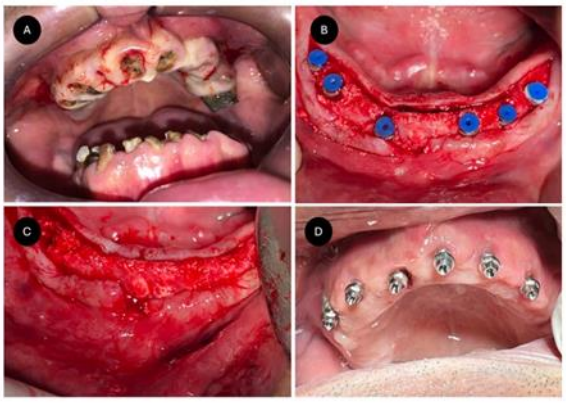

Figure 1. A: Initial clinical examination; **B:** ARCSYS dental implants installed; **C:** Reopening after 9 months; **D:** ARCSYS mini-pillars installed. **Source: FROM AUTHORS**

Four MEPIADRE 100® – DFL anesthetic tubes (mepivacaine hydrochloride 36 mg + epinephrine 18 µg) with 1.8 ml each and a short Terumo® needle were used, where we used the infiltration technique with a carpule syringe, in the entire upper arch. The incision was made with a 15C Swann- Morton® scalpel blade and gingival detachment with a Molt 2:4 curette throughout the vestibular mucosa up to the jugal region and also detachment in the palatine mucosa, just to visualize the curvature of the bone crest. At this stage, the patient reported that the anesthesia had not had enough effect, as he was feeling gingival detachment. All teeth were extracted using a minimally invasive technique (use of levers and periotome) and curettage of the natural alveolus with a Lucas curette.

Six implants (ARCSYS® - FGM) 3.8 X 9 mm were installed, distributed as determined by the reverse planning. Since these are Morse Taper (CM) implants, they were installed 2 mm infra-bone, with a torque of 50 N/cm (Fig.1-B). In addition, to fill the alveolar gaps, synthetic particulate graft Nanosynt® - FGM was used, also on the previously installed implants. The edges were well coapted using Black Nylon suture 5.0 Ag. Reverse Triangular - TECHSUTURE, performing a continuous suture from the distal of region 17 to the distal of region 27. Once finished, the patient returned after 14 days to remove the suture and waited 9 months until complete bone neoformation in the grafted area adjacent to the dental implants (Fig.1-C).

The patient underwent the same surgical procedure 12 months later in the lower jaw, using the same surgical steps. The patient did not undergo surgery that same year due to financial problems. During a follow-up period that lasted for another 9 months, complete lower bone formation and osseointegration of the implants were observed within a period of three months. It is important

to highlight that the patient stopped using the medication in 2016 and since then, he has been undergoing regular medical and psychological monitoring until the current date of 2024.

The re-opening of the implants was performed followed by the installation of the mini-pillars, which will serve as support for the future prosthesis (Fig. 1-D). The entire process of prosthesis fabrication was conducted analogically, using addition silicone molding and transfer trays (Figure 2-A).

Figure 2. A: Parallelism of ARCSYS mini-pillars; **B:** Metal bar test; **C:** Mounting the teeth on the metal bar; **D:** Installation of dental protocols on implants. **Source: FROM AUTHORS**

Subsequently, metal bars were fabricated to serve as the base for the protocol (Figure 2-B), on which the teeth were mounted using wax structures (Figure 2-C). At the end of the protocol fabrication process, the assembly was acrylicized and secured with screws onto the mini-pillars (Figure 2-D).

As a follow-up to the case, a panoramic X-ray was performed six years after the installation of the implants (Figure 3).

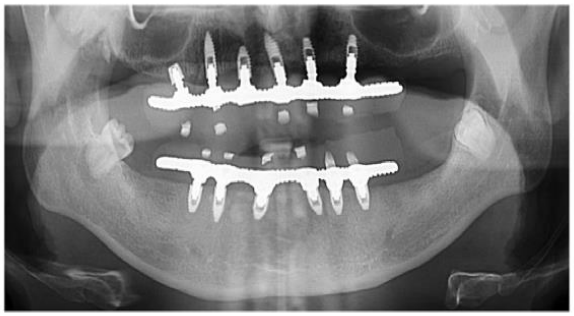

Figure 3: Panoramic x-ray: 6-month follow-up

3. DISCUSSION

Rehabilitation with dental implants for a former crack user, although being a challenging process, represents a significant opportunity for change and transformation in these individuals' lives[11]. It requires a careful approach, patience and a commitment to the patient's full recovery, but the benefits can outweigh the challenges, promoting not only oral health but also psychological and social well-being, which consequently support overall physical recovery [12,1].

Tooth loss is a common and significant consequence of long-term crack cocaine use, with substantial implications for the oral health and general well-being of users. Chronic use of this substance often leads to a range of dental problems, including extensive caries, gingivitis, periodontitis, and dental erosion due to decreased salivary flow and frequent exposure to acidic substances[6,7,14]. These damages, combined with neglect of dental care and poor diet associated with addiction, can result in the loss of multiple teeth over time. As a consequence, crack cocaine users often face significant functional, aesthetic, and psychosocial difficulties, which can impact their quality of life and self-esteem[14,15].

The need to restore masticatory function, dental aesthetics, and general oral health often requires the placement of dental implants, an intervention that, although effective, can be expensive and complex, especially in patients with a history of substance abuse[5,7]. Thus, tooth loss associated with crack use not only represents a challenge to individual oral health, but also implies additional costs for the health system and demands specific resources for oral rehabilitation in vulnerable populations[5,7,8].

A significant reduction in salivary flow has been observed among cocaine and crack users, who frequently report symptoms of dry mouth (xerostomia). In addition, cases of loss of taste (ageusia) have been reported among addicts, especially for sweet, bitter, and salty flavors, compared with nonusers[14]. These findings indicate that cocaine abuse results in changes in both the production and composition of saliva, affecting taste receptors directly or through secondary processes. Changes in the processing of sensory information related to taste in the cerebral cortex and a higher incidence of dry oral mucosa have also been observed [10].

Crack usage has a significant negative impact on the oral health of its users, as this group of individuals tends to neglect their health in general and consequently doesn't have a routine use of dental services. The occurrence of tooth loss is significantly higher in this population group. These findings should be considered when planning prevention strategies to improve oral health in individuals addicted to crack[14].

Crack addiction is a serious problem that affects several social classes in Brazil. Although it is commonly associated with low-income and socially vulnerable areas, it has been spreading even to more financially privileged segments of society[2,9]. Inevitably, these patients will come to our dental offices seeking rehabilitation from the long-term consequences of such addiction. That said, and in addition to the known limitations in oral rehabilitation with removable prostheses, many patients have sought more permanent and comfortable alternatives, such as dental implants[13].

Although crack is a very common illicit drug in Brazil, it does not have such relevancy in North American and European countries. However, we can mention it as a parallel problem similar to the one currently occurring in the United States, which also faces significant problems due to a growing epidemic of overdoses related to the consumption of psychoactive

drugs such as fentanyl and K9[15]. In Brazil, with the use of crack, and in the USA, with the consumption of fentanyl and K9, users have a high rate of dependence and a significant potential for lethal overdose, as well as disproportionate impacts on marginalized communities. A comparative analysis between the crack, fentanyl and/or K9 crises offers valuable insights for the development of effective public policies, since it is necessary to recognize the interconnection between social, economic and health factors, as well as to discuss the ease of access to these illicit drugs for the population in general[14,15].

This study aimed to discuss the impact of the use of drugs that act on the central nervous system, such as crack (a more harmful variation of cocaine), on oral and dental health and, consequently, its influence on rehabilitation with dental implants, since the use of this drug is increasingly recurrent, characterizing a public health problem in Brazil. Despite the limitations of the study, as it is a report of only one case and also the scarcity of literature on the subject, the authors aim to provide more evidence on how to deal with these patients who will invariably be part of the routine of dentists, not only Brazilians, but also Americans, since the USA has been facing similar problems. Thus, this study also aims to encourage other authors to delve deeper into the subject and design new studies that can elucidate this problem in a more robust manner [13,15].

4. CONCLUSION

Therefore, the authors conclude that, despite the interference of psychoactive drugs in stomatognathic physiology, it is not yet possible to clearly define how the abuse of these drugs can impair osseointegration. Despite this, this report makes it clear that oral rehabilitation with dental implants plays a fundamental role in the social reintegration of this individual and, consequently, can help motivate them to abandon use and improve oral and general health.

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