

**Management of the epileptic patient in the dental office: a clinical case report and brief literature review**

**Manejo do paciente epilético no consultório odontológico: um relato de caso clínico e breve revisão de literatura**

**Tratamiento de pacientes epiléticos en la consulta dental: informe de un caso clínico y breve revisión bibliográfica**

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**ABSTRACT**

Outpatient care of epileptic patients can be a significant challenge for dental professionals. Therefore, the present study aimed to report, through a clinical case report, the management of epileptic patients in the dental office. A 16-year-old male patient attended dental care due to tooth decay and periodontal disease. The patient routinely used 250 mg of sodium valproate once a day to control epilepsy. During the clinical and radiographic examination, it was observed the need for guidance regarding dental caries, periodontal disease, suitability of the environment, periodontal, endodontic, surgical, and restorative treatment. Care was taken regarding stress control and, the use of local anesthetics and antibiotics. Given this clinical case report, it was possible to review and act in an optimized manner in the management of epileptic patients in the dental office. The complexity of the disease, the prevalence of those affected, and compromised oral health are highlighted. Dental surgeons must be desensitized to this issue and significantly accommodate this demand from the population.

**Keywords:** epilepsy, epilepsies, partial, dental care, adolescent, child.

**RESUMO**

O atendimento ambulatorial de pacientes epiléticos pode ser um desafio significativo para os profissionais de odontologia. Diante disso, o objetivo do presente trabalho foi descrever por meio de um relato de caso clínico, o manejo do paciente epilético no consultório odontológico. Paciente 16 anos, sexo masculino, compareceu para atendimento odontológico devido a doença cárie e doença periodontal. O paciente fazia uso rotineiro de 250 mg de valproato de sódio uma vez ao dia para controle da epilepsia. Durante exame clínico e radiográfico observou-se a necessidade de orientação quanto à doença cárie dentária, doença periodontal, adequação de meio, tratamento periodontal, endodôntico, cirúrgico e restaurador. Cuidados foram tomados em relação ao controle de estresse, uso de anestésicos locais e antibiótico. Diante o presente relato de caso clínico foi possível revisar e atuar de maneira otimizada no manejo do paciente epilético no consultório odontológico. Destaca-se a complexidade da doença, prevalência de acometidos e comprometimento da saúde bucal. É de extrema importância que cirurgiões-

dentistas sejam dessensibilizados dessa temática e acolha de forma significativa tal demanda da população.

**Palavras-chave:** epilepsia, epilepsias parciais, assistência odontológica, adolescente, criança.

## RESUMEN

La atención ambulatoria de pacientes epilépticos puede suponer un reto importante para los profesionales de la odontología. Por ello, el objetivo de este estudio fue describir el manejo de pacientes epilépticos en la consulta odontológica mediante el relato de un caso clínico. Un paciente varón de 16 años acudió para recibir tratamiento odontológico debido a caries y enfermedad periodontal. El paciente tomaba habitualmente 250 mg de valproato sódico una vez al día para controlar su epilepsia. Un examen clínico y radiográfico reveló la necesidad de asesoramiento sobre caries dental, enfermedad periodontal, adaptación del entorno, tratamiento periodontal, endodóntico, quirúrgico y restaurador. Se prestó atención al control del estrés y al uso de anestésicos locales y antibióticos. Este informe de caso clínico nos ha permitido revisar y optimizar el tratamiento de los pacientes epilépticos en la consulta dental. Pone de manifiesto la complejidad de la enfermedad, la prevalencia de los afectados y el deterioro de la salud bucodental. Es sumamente importante que los dentistas se sensibilicen ante este problema y acojan esta demanda de la población de forma significativa.

**Palabras clave:** epilepsia, epilepsia parcial, atención odontológica, adolescente, niño.

## 1 INTRODUCTION

Epilepsy is a disorder characterized by recurrent episodes of paroxysmal brain dysfunction due to sudden excessive and disordered neuronal discharge (Wirrell *et al.*, 2011; Beghi *et al.*, 2015; Beghi, 2020). Epilepsy classification systems are generally based on clinical signs, etiology, anatomic location, and tendency to spread to other brain structures and temporal patterns (Wirrell *et al.*, 2011; Beghi *et al.*, 2015). As the main sign and symptom of paroxysmal brain dysfunction in epilepsy, unprovoked seizures are highlighted (Wirrell *et al.*, 2011; Beghi, 2020). Seizures can trigger involuntary movements and loss of consciousness (Baumgarten; Marcela; Cancino, 2016). Although the etiology of epilepsy is unknown, genetic, local, systemic, and environmental factors may be cited as influential (Wirrell *et al.*, 2011; Thijs *et al.*, 2019; Beghi, 2020).

Epilepsy is one of the most common serious brain diseases, affecting more than 70 million people worldwide (Thijs *et al.*, 2019). The incidence and prevalence of epilepsy in children appears to be lower in developed countries and higher in rural areas of underdeveloped countries (Camfield; Camfield, 2015; Beghi, 2020). In children and adolescents, the incidence can be described between 0.5% and 1%, making it the most frequent chronic neurological condition in childhood and adolescent (Aberg *et al.*, 2017). Pharmacological and non-pharmacological strategies are proposed for the control of epilepsy (Beghi *et al.*, 2015; Thijs *et*

*al.*, 2019; Opero *et al.*, 2023). It is important to highlight that different prognostic patterns can be identified throughout life, suggesting that the epileptogenic process is not static and requires several therapies (Beghi *et al.*, 2015). Prognosis refers to the likelihood of not having seizures with treatment (Beghi *et al.*, 2015; Thijs *et al.*, 2019). Although there are few reports, lack of follow-up carries a higher risk of premature death (Beghi *et al.*, 2015; Beghi, 2020).

Scientific evidence shows that epileptic patients have an increased risk of damage to the jaw and teeth (Pick; Bauer, 2001; Adewole *et al.*, 2011; Moreira Falci *et al.*, 2019) and may develop side effects on oral tissues from antiepileptic drugs (Pick; Bauer, 2001; Asadi-Pooya *et al.*, 2021). Other scientific evidence also points out that patients with epilepsy have a higher risk of dental caries, non-cariou lesions, periodontal disease, dental trauma, dry mouth and edentulism (Aragon; Burneo, 2007; Tiwari *et al.*, 2021; Goswami; Johar; Khokhar, 2023). Such data reinforce that it is imperative to know the demands that the epileptic patient needs to carry out strategies to promote health, prevent and control (2) Thus, the objective of the present study was to report by means of a clinical case report the management of the epileptic patient in the dental office.

## 2 CLINICAL CASE REPORT

This case report was submitted to the Ethics and Research Committee of the Centro Universitário Presidente Tancredo de Almeida Neves (UNIPTAN) having been approved by the number of the opinion 6.273.084 and number of CAAE 73261923.0.0000.9667.

A 16-year-old male patient, he and his legal guardian attended the Center of Medical and Dental Specialties (CEM) of the School of Dentistry of the Centro Universitário Presidente Tancredo de Almeida Neves (UNIPTAN) with main complaint of "broken teeth". During the history, the person responsible reported that the patient routinely used 250 mg of sodium valproate (Depakene<sup>®</sup>, Abbott Laboratories of Brazil LTDA, São Paulo Brazil) once a day to control epilepsy; the person responsible also reported that the patient presented collaborative behavior in the dental office, but was anxious; the person responsible judged it to be due to anxiety of the same, both of them postponed the dental visit. Other systemic changes were not evidenced. During clinical examination, gingivitis induced by dental biofilm associated with drug use, tooth decay lesions in the upper and lower molars were observed. Oral health guidance focused on gingivitis induced by dental biofilm associated with drug use, initial prophylaxis, and request for radiographic examination was then provided. According to clinical and radiographic evaluation, the preventive/therapeutic strategy was established according to table 1. The patient continues in quarterly follow-up.

Table 1. Individualized therapeutic strategy to restore oral health in epileptic patients.

Query	Therapeutic need	Preventive/therapeutic strategy
1.	<ul style="list-style-type: none"> <li>✓ Dental biofilm-induced gingivitis associated with drug use</li> <li>✓ Dental caries disease</li> </ul>	<ul style="list-style-type: none"> <li>✓ Oral health education - supervised brushing</li> <li>✓ Oral health education - intelligent sugar consumption - food recall</li> <li>✓ Oral health education - importance of dental care to the epileptic patient</li> <li>✓ Prophylactic</li> </ul>
2.	<ul style="list-style-type: none"> <li>✓ Dental biofilm-induced gingivitis associated with drug use</li> <li>✓ Dental caries disease</li> <li>✓ Tooth 36 - mid-depth dental caries lesion on occlusive-distal faces</li> </ul>	<ul style="list-style-type: none"> <li>✓ Oral health education - supervised brushing</li> <li>✓ Oral health education - intelligent sugar consumption</li> <li>✓ Oral health education - importance of dental care to the epileptic patient</li> <li>✓ Selective removal of dental caries and restoration in composite resin on occlusive-distal faces</li> </ul>
3.	<ul style="list-style-type: none"> <li>✓ Dental biofilm-induced gingivitis associated with drug use;</li> <li>✓ dental caries disease;</li> <li>✓ Tooth 26 - deep dental caries lesion with pulp involvement</li> </ul>	<ul style="list-style-type: none"> <li>✓ Oral health education - supervised brushing</li> <li>✓ Oral health education - intelligent sugar consumption</li> <li>✓ Oral health education - importance of dental care to the epileptic patient</li> <li>✓ Pulpectomy and restoration in composite resin on occlusive-of-this-vestibular faces</li> </ul>
4.	<ul style="list-style-type: none"> <li>✓ Dental biofilm-induced gingivitis associated with drug use</li> <li>✓ Dental caries disease</li> <li>✓ Tooth 36 - deep dental caries lesion with pulp involvement</li> </ul>	<ul style="list-style-type: none"> <li>✓ Oral health education - supervised brushing</li> <li>✓ Oral health education - intelligent sugar consumption</li> <li>✓ Oral health education - importance of dental care to the epileptic patient</li> <li>✓ Pulpectomy and restoration in composite resin on occlusive-distal faces</li> </ul>
5	<ul style="list-style-type: none"> <li>✓ Dental biofilm-induced gingivitis associated with drug use</li> <li>✓ Dental caries disease</li> <li>✓ Tooth 26 - deep caries lesion with pulp and furca involvement, unsatisfactory endodontic treatment</li> </ul>	<ul style="list-style-type: none"> <li>✓ Oral health education - supervised brushing</li> <li>✓ Oral health education - intelligent sugar consumption</li> <li>✓ Oral health education - importance of dental care to the epileptic patient</li> <li>✓ Exodontia</li> </ul>
6	<ul style="list-style-type: none"> <li>✓ Dental biofilm-induced gingivitis control associated with drug use</li> <li>✓ Control of dental caries disease</li> <li>✓ Quarterly monitoring</li> </ul>	<ul style="list-style-type: none"> <li>✓ Oral health education - supervised brushing</li> <li>✓ Oral health education - intelligent sugar consumption</li> <li>✓ Oral health education - importance of dental care to the epileptic patient</li> <li>✓ Prophylactic</li> </ul>

Source: The authors.

### 3 DISCUSSION AND BRIEF REVIEW OF LITERATURE

Epilepsy is a very common brain disorder characterized by recurrence of unprovoked seizures (Wirrell *et al.*, 2011; Beghi *et al.*, 2015; Camfield; Camfield, 2015; AAberg, et al., 2017; Thijs et al., 2019; Beghi, 2020). Seizures in turn can trigger involuntary movements until loss of consciousness (Baumgarten; Marcela; Cancino, 2016). As already mentioned, the etiological factors are diverse (Wirrell *et al.*, 2011; Thijs *et al.*, 2019; Beghi, 2020) and the therapeutic strategies are delimited according to the positive and individual response of each patient (Beghi, et al., Beghi, 2015; Thijs,2019; Beghi, 2020). Regarding dental care, it is initially noted that outpatient dental care of epileptic patients can be a significant challenge for dental professionals. It is necessary for professionals to be adequately updated to provide effective and humanized care. Therefore, the objective of the present study was to describe by means of a clinical case study the management of the epileptic patient in the dental office.

It can be stated through the specific and related literature that epileptic patients, besides dealing with crises and all therapeutic demand for disease control, are still subjected to a number of complex psychosocial problems, including psychiatric morbidity, stress and especially the stigma of the general population (Shi *et al.*, 2021; Bai *et al.*, 2023). In 2015, the World Health Organization even emphasized that stigma related to epilepsy could be recognized as a global public health problem as it increases the burden of the disease and is associated with a poor social and clinical prognosis of the affected individuals. Unfortunately, the problem can also be seen in the area of dentistry. A survey conducted on German patients showed that 84% of the studied sample of epileptic patients regularly seek the dental surgeon. Of this amount, 79% reported their epilepsy during anamnesis; 6% were refused treatment. In relation to the dental surgeon, 21% of the professionals reported insecurity during the treatment of the epileptic patient. Most professionals were not familiar with interactions between antibiotics/analgesics and antiepileptic drugs (Schöpfer; Ludolph; Fauser, 2016), intensifying the need to disseminate knowledge and strategies that demonstrate the conduction of humanized dental care to this demand of patients.

In adolescents and young adults in particular, several approaches are proposed to encourage everyday and quality-of-life experiences, including granting more autonomy to adolescents affected by epilepsy, encouraging self-care and individualized counseling (Shi *et al.*, 2021; Bai *et al.*, 2023). In the present clinical case report, a young patient who was welcomed and guided during the first visit with the objective of making him more comfortable and willing to establish a link with the professional, resulting in optimized attention of self-care with oral health. Furthermore, the link could decrease stress and anxiety levels during dental care (Yuan *et al.*, 2020). Regarding guidance on oral impairments, it was initially noted that dental caries, periodontal disease, dry mouth and dental trauma are the most common oral ailments in epileptic patients (Aragon; Burneo, 2007; Tiwari *et al.*, 2021; Goswami; Johar; Khokhar, 2023). Being dental caries a behavioral disease, specific strategies related to intelligent sugar consumption and biofilm removal with brushing and flux use to have been encouraged (Pitts *et al.*, 2021; Beltránet *al.*, 2019; Martignonet *al.*, 2019).

In relation to periodontal disease, guidelines and encouragement for the removal of biofilm with brushing and fluoride use were also carried out once of the possibility of gingival augmentation induced by dental biofilm and anticonvulsant medication (Caton *et al.*, 2018). It is clarified that drug-induced gingival enlargement is a biofilm-mediated gum inflammatory condition associated with pharmacological agents (Caton *et al.*, 2018; Gallo *et al.*, 2020; Barsoum; Prete; Ouanounou, 2022) Unlike the concept used for many years in which gum

hyperplasia was associated solely with the use of anticonvulsant-type drugs, antihypertensive calcium channel blockers and the immunosuppressive cyclosporine (Desai, Silver, 1998). Treatment of epilepsy is usually done using the drugs carbamazepine, lamotrigine, phenytoin, phenobarbital/primidone, and sodium valproate (Gallo *et al.*, 2020). In our case report in addition, the patient was using sodium valproate 250 mg once a day and although he showed no signs of gingival hyperplasia, guidelines were reinforced. A recent study describes the prevalence of 44% of cases of gingival growth in a group of epileptic patients who use sodium valproate (Gallo *et al.*, 2020). However, it is pointed out that the study included patients aged 5 to 80 years and that each life cycle requires different strategies of self-care; thus, it also highlights the need for other studies that delimit such a theme.

Progressing from the medium adequacy phase, the patient also required procedures using topical anesthetic, local anesthetic, and use of antibiotic and analgesic medications. Scientific evidence is clear regarding the possibility of lowering the seizure threshold through the use of local anesthetics, antibiotics, and analgesics. In addition, the pain threshold can support episodes of stress and anxiety, also causing a seizure (Schöpfer; Ludolph; Fauser, 2016). In extremely anxious patients, benzodiazepine sedation may reduce stress-induced seizures (Schöpfer; Ludolph; Fauser, 2016; Goswami; Johar; Khokhar, 2023). In our clinical case report, medications to control trans- and postoperative pain/infection were used with caution. There is a risk of seizure developing during the use of lidocaine hydrochloride as long as it is not accidentally applied intravascularly (Schöpfer; Ludolph; Fauser, 2016). Enzyme-inducing antiepileptic drugs can accelerate the elimination of doxycycline, which can make the antibiotic ineffective (Penttilä *et al.*, 1974). Metronidazole and tramadol can be proconvulsant and should be avoided (Penttilä *et al.*, 1974; Fitzpatrick *et al.*, 2008). Oral penicillin at a lower dosage is less risky than intravenous penicillin at a higher dosage. Another issue worthy of note for the attention and clinical protocols of the epileptic patient is about the interruption or not of the anticonvulsant medication. A current consensus of neurologists and dental surgeons does not recommend discontinuation of sodium valproate in particular, even before extensive dental interventions (Lackmann, 2004; Mallet; Babin; Morais, 2004; Acharya; Bussel, 2000; Schöpfer; Ludolph; Fauser, 2016). Namely, sodium valproate can cause thrombocytopenia and disorders of hemostasis, function and aggregation of thrombocytes (Lackmann, 2004; Mallet; Babin; morais, 2004; Acharya; Bussel, 2000; Schöpfer; Ludolph; Fauser, 2016). Evaluation of prior bleeding time and coagulation parameters is recommended.

Given all the circumstances, it is also valid that the professional is prepared for more complex situations of dental care of the epileptic patient (Schöpfer; Ludolph; Fauser, 2016;

Goswami; Johar; Khokhar, 2023). The guidelines for first aid in the dental office recommend keeping calm, observing the patient, removing the instrumentals from the patient's mouth cavity, positioning the patient's head sideways if possible, also placing the patient in lateral decubitus, not immobilizing him, loosening clothes and keeping him safe from possible trauma. Timing the seizure and calling the emergency ambulance when seizures last longer than 5 minutes or if patients become cyanotic. It is recommended to administer oxygen as well as intravenous or intramuscular administration of diazepam or midazolam in seizures lasting more than 5 minutes (Schöpfer; Ludolph; Fauser, 2016; Goswami; Johar; Khokhar, 2023).

The patient is being followed quarterly for control of dental biofilm, dental caries disease and periodontal disease (Beltrán *et al.*, 2019; Martignon *et al.*, 2019; Pittset *et al.*, 2021). The present clinical case report illustrates the care of the epileptic patient and can also assist in future preventive/therapeutic strategies.

#### **4 FINAL CONSIDERATIONS**

In view of the present clinical case report, it was possible to review and act in an optimized manner in the management of the epileptic patient in the dental office. It highlights the complexity of the disease, prevalence of those affected and oral health impairment. It is of the utmost importance that dental surgeons are desensitized to this theme and receive in a significant manner such demand from the population. It is hoped that the present case report can assist other professionals in strategies of health promotion, disease prevention and humanized therapy.

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