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Case Report Article

Dental extraction in patients with HIV/AIDS: report of two cases

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Abstract

Introduction and objective: The oral health of patients with HIV infection is often compromised by caries and periodontal disease. Thus, many patients need to undergo oral surgical procedures. **Case report:** This article describes two cases of patients with HIV infection who had undergone exodontia due to prosthetic indications. Both patients had been hospitalized for treatment of respiratory complications from HIV infection and were referred for dental treatment. In the first case, the adult patient had generally good oral health. However, the treatment plan for the installation of a removable prosthesis required the removal of tooth 38 since it was fairly inclined to the mesial. The second patient had poor oral conditions due to advanced periodontal disease. Thus, all upper arch teeth were removed in a single session followed by the installation of an immediate total prosthesis. No postoperative complications were recorded and the healing process occurred without incident for both patients. Dental treatment of patients with asymptomatic HIV infection does not differ from that performed for any other patient in practice. Nevertheless, patients in advanced stages of disease may require special treatment and an individual treatment plan must be developed for even routine procedures. **Conclusion:** The dental care of these individuals often requires more rigorous clinical follow-up for maintaining oral health. The performance of dental surgery in patients with HIV infection does not require technical modifications, but does require a complete anamnesis.

Introduction

The main immunological characteristic of patients with untreated HIV/AIDS is a decrease in $CD4^+$ lymphocytes. These cells form the last barrier in the immune response of the organism [22]. Thus, untreated HIV/AIDS individuals are highly susceptible to infections. Additionally, hematological disorders can be present too, such as: anemia, leukopenia, and thrombocytopenia [26]. Thus, simple procedures such as extraction and periodontal surgery can present a hemorrhagic risk in HIV/AIDS patients due to a low hemoglobin concentration (< 7 g/dL) and the frequent use of anticoagulant medication for prevention of thromboembolisms and cardiovascular disease [1].

There is no difference between dental care for individuals with and without HIV infection. However, in clinical practice, many dentists refuse to treat patients with HIV. This probably happens because of the lack of knowledge by professionals on this subject. A dentist who will perform dental surgery needs to consider following these precautions: a) Obtain a very detailed medical history, b) Assess the health risk, and c) Investigate drug interactions [5, 15, 16, 23]. The aim of this article is to report two clinic cases of dental surgery procedures in HIV/AIDS patients. In addition, the authors will discuss their care in the pre, during, and postoperative periods.

Report of cases

Case 1

A 42-year-old man was admitted to the Hospital Oswaldo Cruz (Curitiba, PR, Brazil) to be treated for pulmonary tuberculosis. During the anamneses, he reported that had been infected with HIV for 10 years. Furthermore, he only irregularly used antirretroviral therapy. The oral examination revealed that the patient was in fairly good oral condition, although there were some carious lesions, a coated tongue, and oral candidiasis. For this reason, he was referred for dental treatment at the School of Dentistry, Universidade Federal do Paraná (Curitiba, Brazil). A complete oral examination was performed followed by periapical X-rays. Initially, the patient was instructed to brush the tongue regularly to remove the coating. His oral candidiasis had been previously treated by fluconazole for 7 days.

The treatment plan included the patient's oral rehabilitation with the installation of a removable partial denture in the lower arch. The extraction of the left mandibular third molar was planned due to a prosthetic indication because this tooth was fairly inclined mesially. A hemogram, blood platelet count, hemosedimentation rate, viral load, and CD4 count were requested. No abnormality was observed in his blood count values or hemosedimentation rate. His viral load was undetectable and his CD4 count was 1,215 cells/mm^3. The patient was currently taking antiretroviral therapy (tenofovir + lamivudine + efavirenz) and drugs for treatment of pulmonary tuberculosis (rifampicin + isoniazid + pyrazinamide + ethambutol).

The surgical procedure was performed without the need for antibiotic prophylaxis, but a mouthwash with chlorhexidine gluconate was applied prior to the surgery. After antisepsis, local anesthesia was applied by blocking the inferior alveolar, lingual, and buccal nerves with mepivacaine hydrochloride 20 mg/ml with epinephrine 0.01 mg/ml (Mepivalem® AD Dentsply Pharmaceutical, São Paulo, Brazil). Two tubes with local anesthetics were used. The tooth was removed with a forceps and the surgical wound was closed with a suture X (figure 1). Control of postoperative pain was performed with the prescription of dipyrone 500 mg every 6 hours for 3 days. Seven days later, the patient was reevaluated and the suture was removed. No complications were observed during the course of the wound healing process and the patient was referred for prosthetic rehabilitation treatment.

Figure 1 – Surgical wound closed with a suture in X

Case 2

A 38-year–old man was admitted to the Hospital Oswaldo Cruz (Curitiba, PR, Brazil) to be treated for *Pneumocystis jirovecii* pneumonia. During the anamneses, he reported that he had been infected with HIV for 8 years and had only irregularly used antirretroviral therapy. An oral examination revealed that the patient was in a bad oral condition due to severe periodontitis and defective dental restorations (figure 2). Several teeth

had periodontal pockets with severe mobility. For this reason, when the patient was released from the hospital, he was referred for dental treatment at the School of Dentistry, Pontifícia Universidade Católica do Paraná (Curitiba, Brazil).

A complete oral examination was performed followed by intraoral X-rays. During the anamnesis, the patient reported that he was currently taking antiretroviral therapy (tenofovir + lamivudine + efavirenz) and prophylaxis for pneumonia (sulfamethoxazole + trimethoprim). Initially, the patient was instructed to improve his oral brushing. However, all teeth were indicated for extraction after periodontal evaluation.

Surgical removal of all of the upper and lower permanent teeth was planned followed by installation of a denture. Hemogram, blood platelet count, hemosedimentation rate, viral load, and CD4 count were requested. No abnormalities were observed in the blood count values or hemosedimentation rate. His viral load was low and his CD4 count was 1,290 cells/mm^3.

The surgical procedure was performed during two different sessions without the need for antibiotic prophylaxis. The procedure started after a mouthwash with an oral solution of chlorhexidine gluconate 0.12%. Local anesthesia was performed by blocking of the following nerves: posterior superior alveolar nerve, infraorbital nerve block, and greater palatine and naso-palatine nerves. Four tubes of the anesthetic mepivacaine hydrochloride 20 mg/ml epinephrine 0.01 mg/ml (Mepivalem® AD Dentsply Pharmaceutical, São Paulo, Brazil) were used. The upper teeth were removed with the aid of levers and forceps and a continuous scalloped suture was used to close the wound (figure 3). Finally, an immediate denture was installed on the alveolar ridge (figure 4).

The patient was treated with 600 mg ibuprofen for pain control and postoperative inflammation. Seven days later, the patient was evaluated and the suture removed. No complications were observed during the healing process. Thus, the patient was referred for prosthetic treatment.

A month later, the patient underwent a second procedure for removal of the lower teeth. After antisepsis and mouthwash with an oral solution of chlorhexidine gluconate 0.12%, local anesthetic was applied by blocking the inferior alveolar, lingual, and buccal nerves with three tubes of Mepivalem® AD (mepivacaine hydrochloride 20 mg/ml with epinephrine 0.01 mg/ml). The teeth were removed with levers and forceps. The surgical wound was closed with a suture and control of postoperative pain was obtained with the use of 600 mg ibuprofen every 6 hours for 3 days. Seven days later, the patient was evaluated and the suture removed. No change was observed in the course of the wound healing process. Then, the patient was referred for adjustment of his dentures in the total prosthesis clinic.

Figure 2 – Oral condition of the patient upon presentation

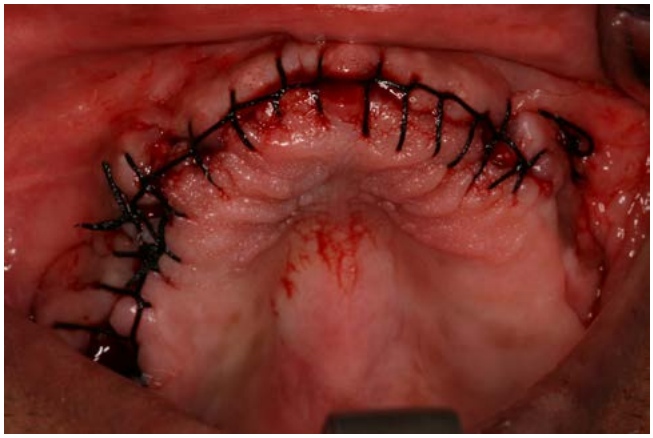

Figure 3 – Surgical wound closed with a continuous suture after multiple dental extractions

Figure 4 – Immediate superior denture installed

Discussion

In general, the dental treatment of patients with HIV infection should follow the same rules for a conventional healthy patient. Today, with the advancement of antiretroviral therapy, patients with HIV can live longer and have a better quality of life. However, it is imperative that healthcare professionals incorporate oral care as part of their general health care [19]. There is an ethical and lawful obligation for dentists to care for HIV-infected patients in the same manner they care for any other patient in the capacity of their profession [8, 23].

Functional cellular immunity is required for normal wound healing. HIV infection affects wound healing adversely. Thus, individuals with untreated or uncontrolled HIV infection are more susceptible to post-surgery complications. These problems may occur due to failure of the defense mechanisms [12, 13, 17, 18, 28]. A risk of complications after dental surgical procedures exists, especially in patients with HIV/AIDS [11, 20].

This article has described two dental surgical procedures in patients with HIV infection. The first patient was subjected to a simple dental extraction. The second case involved a more invasive surgical procedure because multiple teeth were removed simultaneously. In both cases, none of the patients developed postoperative complications or fever. This reinforces the fact that regular dental surgical procedures can be performed if the dentist takes some care and the patient's disease is well-controlled before the procedure.

In this context, the dentist needs to initially investigate the patient's medical history. This includes a full medical history, disease status, CD4 count, viral load, and current medications. Patients with controlled disease can easily tolerate routine dental treatment [9, 23]. Nevertheless, some circumstances such as patients in advanced stages of disease may require special treatment and an individual treatment plan must be developed for even a routine procedure [6, 23].

In both cases presented here, these patients had a history of taking antiretroviral medication irregularly. Thus, they developed pulmonary complications associated with AIDS and were treated in a hospital. For one of the cases reported, the patient made use of the medications sulfamethoxazole + trimethoprim, which have the potential of inducing methemoglobinemia.

Sulfamethoxazole + trimethoprim is a common first-line treatment for many types of infections. An important indication of sulfamethoxazole + trimethoprim is prophylaxis against the immunosuppression-induced pneumonia caused by *P. jirovecii* [7]. However, there have been cases of methemoglobinemia reported among patients with HIV infection, especially those making use of trimethoprim. Some drugs used in dentistry have a high risk of inducing methemoglobinemia, including local anesthetics such as benzocaine and prilocaine. For this reason, mepivacaine was chosen as the local anesthetic to anesthetize this patient.

CD4 count varies from 500 – 1,300 cells/μl in a healthy individual. However, in patients with untreated HIV infection, this value drops significantly as the disease progresses. Consequently, the risk of opportunistic infections increases when the CD4 count reaches very low levels. A CD4 count of 200 cells/μl corresponds to a threshold for an AIDS diagnosis [2]. Viral load is a quantitative measurement of HIV RNA in the serum and provides important information used in conjunction with CD4 counts. Frequent examinations and medical consultations are essential to control the spread of HIV in the body and to determine the most appropriate treatment for each case. For dental surgical care, the dentist needs to check the viral load and CD4 count before being able to provide patient care without problems. The patients who underwent dental extractions in this report were tested to ensure they had normal values of CD4 count and low viral loads.

It is important to note that CD4 count and viral load affects the immune system of the patient. However, other laboratory tests are also important to help the dentist work without increasing the risk of postoperative complications. Due to impaired regulation of the immune system and the potential side effects of anti-retroviral agents, there is also an increase in hematological disorders among these patients [26]. Platelet count (important for homeostasis), hemoglobin level (a decrease in hemoglobin count caused by blood loss, increased healing time, or extreme bleeding during treatment), and absolute neutrophil count (antibiotic premedication indicated) have direct effects on invasive dental care [10].

Some authors are unfavorable to the use of antibiotics for prophylaxis in patients with HIV infection/AIDS before a dental extraction or surgery [21, 24]. Other authors are against the use of prophylactic preoperative therapy unless patients have neutropenia < 500 cells/μl or are at risk of developing bacterial endocarditis. The use of local anesthesia is not related to an increasing risk of oral infections [3]. The cost, possibility of allergic reactions, and adverse effects on the normal microbiota are factors to be considered before using antibiotic prophylaxis prior to a dental

surgery in HIV/AIDS patients. It is also important to know if the HIV/AIDS patient is already taking antibiotics against opportunistic infections. This is especially important to determine if the HIV/AIDS patient is in a late or advanced stage of the disease. Medicinal mouthwashes are recommended before and after treatment to avoid oral infections. Thus, oral solutions containing chlorhexidine gluconate 0.12% can be used. The patient can rinse the mouth prior to the procedure and for at least three days after treatment to help reduce and prevent the proliferation of oral microbes [14, 23].

Several factors need to be considered when planning a simple surgical procedure, such as a tooth extraction. The type and location of the oral surgery, number of extractions, the amount of oral microbes present, the patient's age, and lifestyle (smoking and drinking) are factors that can influence healing in the postoperative period. Furthermore, it is important to consider the dentist's surgical experience in performing the procedure [27].

Some postoperative complications can occur after a dental procedure such as dry socket, pain, infection, bleeding, and prolonged healing [19]. According to Simon and Matee [24], the frequency of post extraction complications is low (1.1%). These complications are mainly due to infected sockets (48.7%), bleeding sockets (41.0%) and retained roots (10.3%). Thus, the dentist must be prepared to treat these complications that can occur in healthy patients as well as in medically compromised individuals. Finally, the following recommendations should be followed before performing any dental surgery in patients with HIV: a) Perform a complete anamnesis, b) Respect biosecurity rules, c) Be aware of possible interactions between drugs, d) Request and evaluate laboratory tests in order to verify the health state of the patient, e) Plan the surgical procedure, f) Perform an appropriate surgical technique that is less traumatic, and g) Perform a postoperative follow-up.

Controlled HIV-infected patients undergoing HAART may be candidates for dental surgeries and implant rehabilitation, as long as their serum HIV viral load and CD4+ T lymphocytes count are within the parameters that indicate immune stability [28]. Because of their increased risk of manifesting dental problems, dental surgical care of patients with HIV should naturally be conducted by dentists. A tooth extraction is a common procedure in dentistry and has been used mainly for the removal of teeth with advanced caries or periapical lesions of an infectious nature. In many countries, the social awareness of dental professionals must be enhanced, so that they can provide the highest quality care to this vulnerable population [4].

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