

Comprehensive Dental Treatment to an Eight-year-old HIV Positive Patient: A Case Report

Dr. Amita Rai,¹ Dr. Bandana Koirala,² Dr. Mamta Dali,³ Dr. Sneha Shrestha⁴

¹Department of Paediatric and Preventive Dentistry, People's Dental College and Hospital, Kathmandu, Nepal

²⁻⁴Department of Paedodontics and Preventive Dentistry, College of Dental Surgery, BP Koirala Institute of Health Sciences, Dharan, Nepal

Correspondence:

Dr. Amita Rai. Email: amitarai2013@gmail.com

ABSTRACT

Human immunodeficiency virus (HIV) is a global pandemic disease. Oral health care is an important component for the management of patients with HIV infection. An eight-year-old, HIV positive female patient reported with chief complaint of pain in right upper back teeth. Intraorally, there were draining sinuses, multiple carious teeth and root stumps. Comprehensive dental treatment was provided to the patient in three sittings following universal precautions. The treatment provided included: fluoride application, scaling, pulpectomy of 54 followed by stainless steel crown, pit and fissure sealant application, restoration of carious teeth, extractions, band and loop, and lingual holding arch space maintainer.

Keywords: Comprehensive dental treatment; human immunodeficiency virus; post exposure prophylaxis.

INTRODUCTION

Human immunodeficiency virus (HIV) is a global pandemic disease. It is a chronic infection, characterised by an asymptomatic phase, followed by the appearance of the first symptoms due to immunosuppression, leading to acquired immunodeficiency syndrome (AIDS) in the end. The cause of the symptoms is the destructive effect of the HIV virus on T-helper lymphocytes, in which the virus completes its replication cycle.¹ Oral health care is an important component for the management of patients with HIV infection. A poorly functioning dentition can adversely affect the quality of life, complicate medical conditions, and create or exacerbate nutritional and psychosocial problems.²

CASE REPORT

An eight-year-old female patient reported with chief complaint of pain in right upper back teeth. Medical history revealed that she was a diagnosed

case of HIV infection, and was under highly active antiretroviral therapy (HAART) for two years, and her CD4 count was 929.

Intraoral examination revealed draining sinuses with respect to (wrt.) 51, 61, and 62 (according to two-digit numbering system); carious: 54, 52, 61, 62, 64, 75, 73, 84, and 85; root stump of 51; deep pits on 55, 65, 74; missing: 72 and 82; mobile: 61; and generalised debris and plaque. Based on the history and clinical examination, diagnosis of suppurative periapical abscesses wrt. 51, 61, and 62 was made. Orthopantomogram (OPG) revealed root resorption of 52, 51, 62, and 64; radiolucency involving enamel, dentin, and pulp on 54 and 64; crown formation of 24; missing 72 and 82; and inadequate space for the eruption of 42 (Figure 1).

Citation

Rai A, Koirala B, Dali M, Shrestha S. Comprehensive Dental Treatment to an Eight-year-old HIV Positive Patient: A Case Report. J Nepal Dent Assoc. 2020 Jul-Dec;20(31):115-9.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution CC BY 4.0 Licence.

© 2020 JNDA | Published by Nepal Dental Association



Figure 1: Pretreatment photographs.



Figure 2: Intratreatment photographs.



Figure 3: Three-month follow-up photographs.

Informed consent and assent for the treatment procedures were taken from the patient party. On the first visit: detailed clinical and radiographic examination following universal precautions, counselling regarding treatment plan, oral hygiene instructions, diet counselling, and medical consultation was done.

After evaluation of medical records, treatment was completed in three sittings. On the first sitting, pulpectomy of 54 was started; glass ionomer cement type VII (GIC VII) (GC Fuji VII, GC Corporation) sealing of pit and fissure of 55; GIC VII restoration of 84 and 85; band fabrication on 65, 75, and 85 was done followed by impression making of maxillary and mandibular arches using hydrocolloid impression material (Dentsply India, Pvt. Ltd); and extraction of 52, 51, and 61 was done under local anaesthesia (LA). After discharging the patient to be recalled on the next day, working casts were prepared and fabrication of band and loop (B and L) space maintainer (SM) and lingual holding

arch (LHA) SM was done in lab. On the second sitting, completion of pulpectomy and cementation of stainless steel crown on 54; full mouth manual scaling; extraction of 62 and 64 under LA; cementation of B and L SM on 65; and LHA SM on 75 and 85; GIC IX sealing of pit and fissure of 65 and 74; and GIC VII restoration of 73 and 75 were done (Figure 2). On the third sitting, post treatment evaluation was done followed by topical fluoride varnish application. On the three-month follow-up visit, oral hygiene maintenance was good with no any other complaints (Figure 3).

DISCUSSION

Since the first reported case in 1981, as of 2015, 36.9 million people are reported to be HIV positive, among which 18.8 million are under 14 years of age.¹ The first case of HIV was reported in Nepal in 1988. In Nepal, there are about 39,397 people living with HIV/AIDS among which 1,600 are children of 0-14 years old, as of 2015.³ Bearing in mind that the immune system of paediatric patients is still immature, children infected with HIV are exposed to severe conditions, such as multisystemic disease affection and faster disease development.¹ Although a cure is not in sight, HAART has made HIV/AIDS a chronic, manageable disease, and early identification of HIV infection can result in timely access to health care for the child.²

Many studies have reported higher prevalence of dental caries in HIV infected children.⁴ In a study done among 27 HIV positive children, prevalence of tooth decay in primary teeth (deft) for the age group 2-6 years was 57.15% and 7-12 years was

Table 1: EC-Clearinghouse and the World Health Organisation classification of oral manifestations of paediatric HIV disease (1993).

Group 1 lesions commonly associated with paediatric HIV infection	Group 2 lesions less commonly associated with paediatric HIV infection	Group 3 lesions strongly associated with paediatric HIV infection
Candidosis (erythematous, pseudomembranous, angular cheilitis)	Seborrheic dermatitis	Kaposi's sarcoma
Herpes simplex viral infection	Necrotising ulcerative stomatitis	Non-Hodgkin's lymphoma
Linear gingival erythema	Necrotising ulcerative gingivitis	Oral hairy leukoplakia
Parotid enlargement	Necrotising ulcerative periodontitis	Tuberculosis-related ulcers
Recurrent aphthous ulcers	Viral infections (CMV, HPV, Varicella zoster)	
	Xerostomia	

20%. Prevalence of tooth decay in permanent teeth (DMFT), for the age group 7-8 years was 16.60% and 10-12 years was 21.42%. Of the 27 children examined, 59.25% were caries free, in which 40% were male children and 70.58% were female children.⁵

The provision of care for HIV positive patients should be coordinated between medical and oral health care providers. The medical health care provider should encourage all patients under his/her care to schedule a semi-annual oral health examination and to adhere to the oral health care provider's recommendations regarding appropriate follow-up.² As the oral health care provider may be the first health professional to suspect HIV infection in the paediatric patient, he/she should know the findings suggestive of HIV infection.⁶ Oral candidiasis and oral hairy leukoplakia are predictors of AIDS evolution and are related with CD4 T-lymphocyte cell count <200 cells/ml.^{2,7} HIV infected children in whom disease is well controlled by antiretroviral therapy will commonly show no signs of oral lesions. Untreated or undiagnosed children will be more likely to develop lesions.⁶

Oral lesions seen in HIV paediatric patients are illustrated in Table 1.²

Dental treatment modifications for patients with HIV infection should be based on the patient's general medical status rather than his/her HIV infection.² Universal precautions should be used with all patients to avoid transmission between patients and dental care workers, and from one patient to another since dentists and patients themselves will not always be aware of who is HIV positive.⁸

Table 2 depicts general considerations while providing dental care to the HIV positive patients.⁶

Oral complication rates after dental procedures: Whether HIV infected patients have a greater propensity for experiencing complications from dental treatment has been controversial.⁶ In a study done by Campo et al., the overall complication rate was 2.2% (7/314). Seven complications were documented (one persistent pain, two prolonged bleeding, three infections, and one bone sequestrum) in 147 invasive procedures (4.8%) including extractions, periodontal scaling, and endodontic treatment. All complications were minor and were managed on an outpatient basis. No complications were recorded after noninvasive dental procedures.⁹

Medication interactions: Patients with HIV infection usually take numerous medications. Some of the medications used in HIV disease affect the haematologic status of patients. Medications causing neutropenia and anaemias include common drugs such as zidovudine, trimethoprim-sulfamethoxazole, and ganciclovir. Some of these medications may have significant side effects and may interact with medications commonly used in dentistry. The absorption rate of ketoconazole, an antifungal agent, may be reduced as much as 80% with concurrent use of rifampicin-isoniazid. Patients show increased adverse reactions toward other antibiotics including amoxicillin-clavulanic acid, ciprofloxacin, dicloxacillin, erythromycin, and clindamycin, when their CD4 cell count decreases.⁶

Post exposure prophylaxis (PEP): Prospective studies have estimated that the average risk for HIV transmission in health care workers (HCWs)

Table 2: General considerations while providing dental care to the HIV positive patients.

Restorative dentistry	HIV positive children should receive normal dental care based on their general ability to undergo treatment procedures, not their HIV status.
Local anaesthetics	In patients with a history of poor haemostasis, it is advisable to avoid deep block injections. In these patients local infiltration is appropriate.
Endodontics	Neither HIV infection nor AIDS are contraindications for endodontic treatment, including pulpotomy. One step endodontic therapy should always be considered in case of acute pulpitis, when patients require antibiotic prophylaxis or when patients with physical limitations are unable to return for multiple visits.
Extractions and other surgical procedures	If a questionable health status influences anticipated oral surgery, the dentist must consult with the patient's physician. All procedures must be performed in a manner that minimises bleeding and avoids bringing oral pathogens into the deeper fascial planes and oral spaces.
Periodontics	The treatment principles involve instructions in improved oral hygiene, scaling and debridement combined with chlorhexidine mouth rinse. Povidone iodine irrigation is often recommended during this debridement procedure due to its anaesthetic and antiseptic effects. Antibiotics as an adjunct to treatment should be used with caution due to the risk of overgrowth of candida species.
Orthodontics	The factors to consider in planning orthodontic treatment are the same for patients with HIV infection as for all patients. Late stage AIDS, like other debilitating systemic diseases is a primary contraindication for extensive orthodontic treatment. There should be greater emphasis on oral hygiene and meticulous care of retainers and appliances. Chlorhexidine mouth rinses should be advised and fluoride supplementation prescribed.

after a percutaneous exposure to HIV-infected blood is approximately 0.3% and that after a mucous membrane exposure it is 0.1%.¹⁰ After an occupational blood exposure, first aid should be administered as necessary. Puncture wounds and other injuries to the skin should be washed with soap and water; mucous membranes should be flushed with water. Exposed HCW should immediately report the exposure to the infection control coordinator or other designated person, who should initiate referral to the qualified health care professional and complete necessary reports. PEP should be started within 72 hours of exposure. Zidovudine and other reverse transcriptase inhibitors may be important for PEP by preventing early viral dissemination.^{8,10}

Dental anxiety might be a barrier into receiving dental care among HIV infected individuals.

Patients may be concerned about the confidentiality, they might anticipate judgment, stigmatisation, or disrespectful treatment in the dental office because of their HIV status. Poor knowledge about HIV transmission among HCWs will lead to potential stigma and lack of treatment for people living with HIV. All dentists should be able to provide routine dental care for the adult or child with HIV disease. Good judgment and prudent application of techniques are important in treating the HIV positive patient, just as they are in treating any other patient.⁸

Conflict of Interest: None.



REFERENCES

1. Lauritano D, Moreo G, Oberti L, Lucchese A, Stasio DD, Conese M, Carinci F. Oral manifestations in HIV-positive children: A systematic review. *Pathogens*. 2020;9(2):88-102.
2. Nagi R, Patil DJ, Sahu S. Oral health of children and adolescents infected with human immunodeficiency virus and impact of highly active antiretroviral therapy on quality of life. *J Indian Acad Oral Med Radiol*. 2018;30(3):289-96.
3. Government of Nepal Ministry of Health National Centre for AIDS and STD Control. National HIV Strategic Plan 2016-2021. 2nd ed. 2017. 1p
4. Rajonson N, Meless D, Ba B, Faye M, Diby JS, N'zore S, et al. High prevalence of dental caries among HIV-infected children in West Africa compared to uninfected siblings. *J Public Health Dent*. 2017;77(3):234-43.
5. Sahana S, Krishnappa SS, Krishnappa VS. Low prevalence of dental caries in children with perinatal HIV infection. *J Oral Maxillofac Pathol*. 2013;17(2):212-6.
6. Mittal M. Nutritional considerations and dental management of children and adolescents with HIV/AIDS. *J Clin Pediatr Dent*. 2011;36(1):85-92.
7. Ramirez-Amador V, Esquivel-Pedraza L, Sierra-Madero J, Soto-Ramirez L, Gonzalez-Ramirez I, Anaya-Saavedra G, et al. Oral clinical markers and viral load in a prospective cohort of Mexican HIV-infected patients. *AIDS*. 2001;15(14):1910-1.
8. Neenu S, Sharma V, Bhat PK, Alashetty P. Barriers in providing dental treatment to HIV/AIDS patients. *Int J Contemp Med Res*. 2017;4(6):1402-5.
9. Campo J, Cano J, del Romero J, Hernando V, Rodriguez C, Bascones A. Oral complication risks after invasive and non-invasive dental procedures in HIV-positive patients. *Oral Dis*. 2007;13(1):110-6.
10. Kohn WG, Collins AS, Cleveland JL, Harte JA, Eklund KJ, Malvitz DM. Guidelines for infection control in dental health-care settings--2003. *MMWR Recomm Rep*. 2003;52(RR-17):1-61.