

# Hypersensitivity due to Chlorhexidine Digluconate Mouthwash: A Report of an Uncommon Case

Dr. Suresh Bhandari,<sup>1</sup> Dr. Sajeev Shrestha,<sup>1</sup> Dr. Khushbu Adhikari,<sup>1</sup>  
Dr. Pujan Acharya,<sup>1</sup> Dr. Victory Thapa<sup>2</sup>

<sup>1</sup>Department of Periodontology and Oral Implantology, B.P Koirala Institute of Health Sciences, Dharan, Sunsari, Nepal;

<sup>2</sup>Department of Dentistry, Pokhara Academy of Health Sciences, Pokhara, Kaski, Nepal.

## ABSTRACT

Chlorhexidine is a commonly used mouthwash in dentistry with proven benefits for various periodontal conditions. Various minor side effects may occur after its use in the oral cavity. However, in some uncommon cases, more severe signs and symptoms may develop, which require prompt attention. The present case report describes the clinical findings and management in one such instance where a patient developed a delayed hypersensitivity reaction a few days after the use of Chlorhexidine digluconate mouthwash. The signs and symptoms of the patient gradually subsided after the discontinuation of the mouthwash and the use of an oral antihistaminic medication.

**Keywords:** Anaphylaxis; antihistamine; hypersensitivity; patch test; prick test.

## INTRODUCTION

Chlorhexidine is the most commonly used mouthwash in dentistry which is available in two concentrations, 0.12% and 0.2%. It has shown a considerable reduction in plaque biofilm and gingivitis.<sup>1</sup> Though low systemic toxicity and teratogenicity have been reported with its use, it is not free from various local side effects. The most common of which are brown discoloration of teeth, tongue, and restorations, and transient impairment of taste perception. Less common side effects include oral mucosal erosions, bilateral parotid swellings, and a variety of hypersensitivity reactions, which range from mild forms of delayed hypersensitivity to severe life-threatening anaphylactic reactions.<sup>2,3</sup>

## CASE REPORT

A 45-year-old, male patient reported to the Department of Periodontology and Oral Implantology, B.P. Koirala Institute of Health Sciences with the chief complaint of bleeding gums for the last three months. On intraoral examination, abundant plaque and calculus

deposits, generalised soft and oedematous gingiva, and bleeding on probing were evident (Figure 1a, b). A periodontal abscess on the buccal aspect of 47 was also present. Radiographic examination with an orthopantomogram (OPG) showed no significant bone loss. Abscess drainage through the sulcus was done in relation to 47, along with full mouth ultrasonic scaling on the same day. The patient was prescribed chlorhexidine mouthwash (0.2%, 10 ml, twice per day, to be rinsed for 30 seconds) for 10 days along with oral hygiene instructions. The patient was recalled after 14 days.

However, the patient returned on the eleventh day with swelling in the lips, and cheeks, together with itching and burning sensation in the mouth after the use of prescribed mouthwash as instructed (Figure 2, Figure 3 a, b).

Although the patient had minor symptoms like burning sensation in the mouth immediately after the first use of mouthwash, major symptoms like swelling of lips and a severe burning sensation started on the third day. On the fifth day, the patient skipped the mouthwash for two days, after which the symptoms resolved to some extent. Similar symptoms reappeared when he started using the mouthwash on the seventh day again.

There were no contributory medical history, no history of smoking, alcohol consumption, or allergies to food or other agents.

## Correspondence

Dr. Suresh Bhandari  
Email: seerush@gmail.com



## Citation

Bhandari S, Shrestha S, Adhikari A, Acharya P, Thapa V. Hypersensitivity due to Chlorhexidine Di-gluconate Mouthwash: A Report of an Uncommon Case. *J Nepal Soc Perio Oral Implantol.* 2023 Jan-June;7(13):34-7.



Figure 1: a) and b) Preoperative right and left lateral views.



Figure 2: Lip and cheek swelling presented on the eleventh day after the use of mouthwash.



Figure 3: a, b) Right and left lateral views with multiple minor ulcerations and desquamation (eleventh day).

Extraoral examination revealed enlarged, slightly everted lips and swollen cheeks. On intraoral examination, there was generalised erythema and oedema of the gingiva with multiple areas of minor ulceration and desquamation extending up to the vestibular depth. There was also the presence of

whitish scappable slough in the vestibular areas. The lesions were painless with no bleeding or discharge.

After evaluation of the lesion, the patient was advised to discontinue the use of mouthwash and prescribed an antihistaminic medication (fexofenadine 180 mg, once daily) for seven days.



Figure 4: Lip swelling subsided one week after discontinuation of mouthwash.

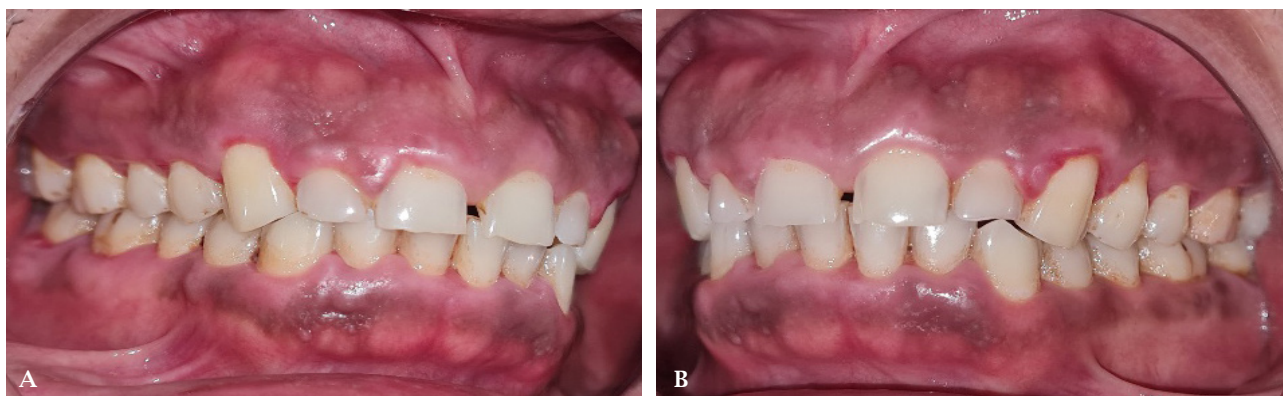


Figure 5 a, b): Right and left lateral views with resolution of lesions one week after discontinuation of mouthwash.

On discontinuation of the mouthwash and consumption of the prescribed medication, the swelling subsided (Figure 4). The patient had no intraoral and extraoral signs and symptoms at one week (Figures 5 a, b), after which the necessary periodontal treatment was continued.

## DISCUSSION

Although, the use of chlorhexidine-based products is extensive in dentistry, reported cases of hypersensitivity to these products are still few. In this case, a direct and definitive relationship cannot be established between the use of chlorhexidine and the symptoms presented by the patient. The history provided by the patient and the lack of other factors responsible for an allergic reaction were considered as evidence to establish chlorhexidine as an allergen. Also, the resolution of the symptoms after discontinuation of mouthwash supports the finding.

Various authors have reported similar findings with the use of chlorhexidine mouthwashes and

chlorhexidine-based products. An intense burning sensation after the first application was reported in one case report.<sup>4</sup> Contrarily, a gradual onset of burning sensation was evident in the present case which progressed over a few days. Ulcerations and desquamations of marginal gingiva and alveolar mucosa were seen in a case report, whereas, desquamation also involved alveolar sulcus, lips, and palate in another report of three cases.<sup>5,6</sup> In the present case, ulcerations and desquamations involved gingiva and alveolar mucosa sparing lips, palate, and floor of the mouth. The reason for the involvement of these specific areas may be the action of chlorhexidine in areas with epithelial breach due to mechanical trauma during scaling as well as tooth brushing which is supported by various reports.<sup>5,6</sup> Lip and cheek swelling were one of the various side effects of chlorhexidine mouthwash encountered in a study among veterans with poorly controlled diabetes.<sup>3</sup> In contrast, lip and cheek swelling was evident in systemically healthy patients in the present case.



The clinical presentations, in this case, can be attributed to a delayed type of hypersensitivity reaction that is mediated by T cells (cellular immunity), where antigen stimulates the sensitized CD4+ T cells to secrete various cytokines, ultimately causing tissue damage.<sup>8</sup> Considering this fact, the patient was also advised to refrain from using chlorhexidine and chlorhexidine-based products in the future to avoid potential risks of new and more severe reactions.

The prick test for immediate hypersensitivity and patch test for delayed hypersensitivity are the most commonly used tests to confirm hypersensitivity reactions to a certain agent. These are found to be of limited use in cases of mucosal lesions.<sup>9</sup> The microscopic findings in cases of mucosal hypersensitivity have also been found to be mostly non-specific.<sup>4</sup> Therefore, a biopsy was not considered in the present case to avoid any additional discomfort for the patient.

On most occasions, discontinuation of the product resolves the symptoms. In some cases, the use of analgesics, antipyretics, antihistamines, and corticosteroids may be needed.<sup>4,9</sup> In the present case,

an antihistaminic medication was used considering lip and cheek swelling.

In very rare instances, there is also reporting of fatal anaphylactic reactions to chlorhexidine use in dentistry.<sup>2</sup> Hence, signs and symptoms of hypersensitivity to chlorhexidine cannot be ignored and patient education regarding the same should also be provided during the prescription. Patients should be strictly instructed to rinse with the 0.2% mouthwash for 30 seconds, rinsing for a longer duration may cause mucosal ulceration with features of desquamation.

### SUMMARY

Chlorhexidine is the most widely used antiseptic, antibacterial, and antiplaque agent in dentistry with proven success. Mild side effects with the use are common but the allergic reactions are relatively uncommon. Although infrequent, all dental practitioners should be aware of the adverse reactions, their clinical presentations, and their management.

**Conflict of interest:** None.

### REFERENCES

1. James P, Worthington HV, Parnell C, Harding M, Lamont T, Cheung A, et al. Chlorhexidine mouthrinse as an adjunctive treatment for gingival health. *Cochrane Database Syst Rev.* 2017(3):CD008676.
2. Pemberton MN, Gibson J. Chlorhexidine and hypersensitivity reactions in dentistry. *Br Dent J.* 2012;213(11):547-50.
3. McCoy LC, Wehler CJ, Rich SE, Garcia RI, Miller DR, Jones JA. Adverse events associated with chlorhexidine use: Results from the Department of Veterans Affairs Dental Diabetes Study. *J Am Dent Assoc.* 2008;139(2):178-83.
4. Kotsailidi EA, Kalogirou EM, Michelogiannakis D, Vlachodimitropoulos D, Tosios KI. Hypersensitivity reaction of the gingiva to chlorhexidine: Case report and literature review. *Oral Surg Oral Med Oral Pathol Oral Radiol.* 2020;130(2):156-60.
5. Almqvist H, Luthman J. Gingival and mucosal reactions after intensive chlorhexidine gel treatment with or without oral hygiene measures. *Eur J Oral Sci.* 1988;96(6):557-60.
6. Skoglund LA, Holst E. Desquamative mucosal reactions due to chlorhexidine gluconate: Report of 3 cases. *Int J Oral Surg.* 1982;11(6):380-2.
7. Pichler WJ. Delayed drug hypersensitivity reactions. *Ann Intern Med.* 2003 Oct 21;139(8):683-93.
8. Liippo J, Kousa P, Lammintausta K. The relevance of chlorhexidine contact allergy. *Contact Derm.* 2011;64(4):229-34.
9. De Rossi SS, Greenberg MS. Intraoral contact allergy: A literature review and case reports. *J Am Dent Assoc.* 1998;129(10):1435-41.