

## Case study of a patient who experienced an allergic reaction after using a substance for dental impressions

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Case Report

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**Abstract:** For any practicing dentist, an allergic response to an exceedingly common dental treatment, such as impression creation, is a nightmare. This is a very uncommon account of a patient who had an allergic attack during a standard impression-taking process used in the denture-making process. The patient had symptoms, which disappeared once antihistamines were given. A similar response was generated from the patient during his prior impression-taking session, which was overlooked when asking his medical history. Following remission, the patient was monitored and the standard course of therapy was followed. Additionally, he was questioned about the adverse reaction at his next dentist appointment.

**Keywords:** Allergic reaction, Dental impression, Sensitization, Symptoms, Swelling.

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### INTRODUCTION

For a long time, eugenol has been extensively utilized in dental goods. It has been claimed that eugenol and zinc oxide may be combined to create zinc oxide eugenol (ZOE), which has medicinal qualities [1, 2]. Because ZOE impression paste is so inexpensive, it is frequently used as the final imprint material for full dentures in underdeveloped nations. ZOE is regarded as safe even if signs of severe intolerance brought on by its burning sensation are frequent [3]. Eugenol allergies from impression materials are extremely uncommon and hardly documented in the literature. A case study that was published not too long ago detailed the negative effects of ZOE on a small infant. It manifested as contact stomatitis, a localized response brought on by exposure to ZOE cement [2]. It is critical that both the general public and practitioners understand the possibility of hypersensitivity-related responses while utilizing such products [4, 5]. This study reports an unusual allergic response that a patient experiencing a straightforward ZOE impression paste treatment had.

### DESCRIPTION

In the Department of Prosthodontics at the Dhaka Medical College Hospital, Bangladesh, a 46-year-old female patient underwent a routine secondary impression procedure using slow setting ZOE. Four minutes after the tray was inserted, the patient experienced gagging, directing the operator's attention to the mouth. The lip spontaneously grew to almost 12-18 mm, and the swelling was diffused in both lips, extending to the base of the nose and the columella. The patient was rushed to the attached medical college hospital casualty, where he was evaluated and diagnosed with an allergic reaction. The patient's vital signs were within normal range, and there were no signs of inflammation or erythema intraorally. After receiving 6 mg of chlorpheniramine maleate, the patient was observed in the casualty room for 30 minutes. After the patient was moved to the dental block, the swelling progressively went away and went away entirely in two hours. With the patient's informed agreement, a photo was taken one hour after the patient was declared stable. His swelling is said to be half its previous size in the figure.



**Figure 1: Lower lip edema after a secondary impression made with zinc oxide and ethylene for full dentures**

## DISCUSSION

The active component found in clove essential oil is eugenol. According to recent research, eugenol is also a significant component of the essential oil extracted from several aromatic plants [6]. Nearly every bodily system is affected pharmacologically by eugenol, and clove essential oil is thought to be an antibacterial agent for oral infections [7]. It is one of the tried-and-true prosthodontic materials for secondary impression in patients who are entirely edentulous and undergoing treatment with a removable complete denture. The Food and Drug Administration (FDA) states that the substance is harmless and not a mutagen or carcinogen [8]. Research has been done on the cytotoxicity of eugenol, which can result in tissue damage ranging from mild allergic responses to severe reactions. Sensitized people may get severe allergies from it.

Eugenol administered intravenously and via respiratory route was reported to induce tissue damage and hemorrhagic lung edema in animal tests [9]. Contact urticaria, gingivitis, stomatitis venenata, and allergic eczema of the skin are examples of allergic responses. After root canal therapy, zinc oxide allergy was also recorded [10]. Generally speaking, a severe allergic response might start as tongue and lip edema and progress to the epiglottis, which can cause respiratory difficulties. Although there are no reports of such a severe reaction following eugenol exposure, the dentist should be ready for any emergency. It is crucial to take note of the patient's history and should not be overlooked. A significant response may occur from a previous eugenol sensitization upon future exposure. Eugenol's high solubility allows it to quickly seep out of the imprint material and come into high quantities that touch the mucosa. Colophony, a rosin found in most eugenol impression pastes, periodontal dressings, root canal sealers, and varnishes, is another substance that may be linked to contact stomatitis and allergies.

Reassessing is the only way to establish a significant positive association in the presented situation. Elastomers have mostly replaced ZOE impression paste due to drawbacks including stickiness and burning feeling. The usage of ZOE is essential in developing nations due to its cost-effectiveness and desirable mechanical and physical qualities for creating impressions.

## CONCLUSION

The conclusion is that ZOE impression paste may be connected to the allergic response. We can also infer the relationship from the patient's prior dental experiences. In both medicine and dentistry, it is crucial that the dentist obtains a complete medical history, including information on allergies and any negative experiences with certain materials or treatments.

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