

# Allergic Reaction Caused by a Lip Balm–Flavored Facemask Used During Inhalational Induction: A Case Report

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Flavoring a facemask with a lip balm for inhalational induction in children is a common practice. However, most anesthesia providers are unaware of potential complications and the management of allergic reactions caused by lip balm. We describe the occurrence of allergic reaction to lip balm–flavored facemask in a child who underwent an inhalational anesthetic induction. The facial rash resolved completely without complications after administration of an antihistamine and steroid. (A&A Practice. 2018;10:148–9.)

It is a common practice to flavor a facemask with a lip balm for inhalational induction in children,<sup>1</sup> but allergic reactions from a lip balm have not been reported in this setting. Phenoxyethanol is one of the ingredients of lip balms and is used widely as a preservative in cosmetics and medications.<sup>2</sup> There is a case report of phenoxyethanol-induced contact urticaria and an associated anaphylactic reaction.<sup>3,4</sup> We report a case of a child who developed urticarial rash caused by a phenoxyethanol-incorporated lip balm applied to facemask to facilitate inhalational anesthetic induction.

The patient's parents provided written permission for publication of this case report.

## CASE DESCRIPTION

A 7-year-old, 32.8-kg boy with a medical history significant for severe persistent asthma, allergic rhinitis, eosinophilia, and peanut/tree nut allergy was scheduled for a bronchoscopy for evaluation of persistent cough and respiratory symptoms. He was in his usual state of health before this procedure. An inhalational induction via facemask with sevoflurane/nitrous oxide and oxygen (50:50 mixture) was performed. As per routine practice at our institution, the inner side of the facemask was smeared with a “Hershey's Kisses” lip balm to facilitate anesthesia induction and encourage patient cooperation by disguising the unpleasant smell of the plastic mask and anesthetic vapor. After induction, intravenous (IV) access was established. Propofol 200 µg/kg/min was administered IV as an infusion to maintain anesthesia. The rest of the anesthetic course was uneventful. The bronchoscopy

revealed adenoid hypertrophy, significant pharyngomalacia, and moderate tracheomalacia and bronchomalacia.

After the procedure, the patient was noted to have a facial rash on the area where the facemask and the physician's hands would have contacted his face (Figure). All objects (gloves and facemask) that were in contact with his face were latex free. He had no hives elsewhere and showed no systemic symptoms, such as wheezing, airway compromise, hypotension, or change in heart rate. He was given IV diphenhydramine 25 mg and dexamethasone 8 mg, and his rash ultimately resolved within 24 hours after the procedure without further treatment. The patient was referred to an allergy specialist for evaluation of the facial rash. A diagnosis of contact urticaria with phenoxyethanol as the causative agent was established.

## DISCUSSION

Hypersensitivity or allergic reactions during the perioperative period are increasing and can be potentially life threatening.<sup>5</sup> It has been reported that these reactions are more common in atopic patients.<sup>6</sup> This is in keeping with our patient's history of atopic disease, including asthma, allergic rhinitis, eosinophilia, and food allergy that may have increased his risk of having an allergic drug reaction. The most common agents involved are neuromuscular blocking agents, latex, and antibiotics. Nevertheless, it is often difficult to determine the exact cause of an allergic reaction because patients receive multiple medications within a short time. Also, there are contact exposures, and allergy testing has limitations. Identification of the offending agent can thus be a challenge. In our case, after discussion with an allergist, given the location and timing of the rash, the suspected trigger was the lip balm used to flavor the facemask. Perhaps the lip balm aerosolized around the patient's face and neck after mask ventilation, which may explain the distribution of the rash. The ingredients of the lip balm are as shown in the Table. In particular, phenoxyethanol has been implicated in immediate hypersensitivity reactions including anaphylaxis,<sup>2-4</sup> which makes it the most likely allergen in this case. Other ingredients such as polybutene and ozokerite have not been reported to cause allergic reactions. Phenoxyethanol is a preservative added to cosmetics, foods, and pharmaceuticals such as antibiotic ointments, ophthalmic solutions, and also has been increasingly used in vaccines as a substitute for thimerosal.<sup>7</sup> Several cases of contact

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**Figure.** Facial rash caused by lip balm–flavored facemask used during inhalational induction.

#### Table. Common Lip Balm Ingredients

Polybutene
Ozokerite
Ethylhexyl palmitate
Phenoxyethanol
Carnauba wax
Fragrance
Mineral oil
Paraffin
Sodium saccharin
Petrolatum
Synthetic wax

dermatitis caused by phenoxyethanol have been reported, but no specific immunoglobulin E antibody has been detected.<sup>7</sup> Based on consultation with the allergy specialist, allergic skin testing was deferred due to the obvious nature of clinical manifestations, in general, and the practical limitations of performing skin testing of this product, in particular (ie, determining the correct concentration and most suitable vehicle for patch testing).<sup>8</sup> Our patient experienced cutaneous manifestations localized to the face without systemic symptoms, such as wheezing, airway compromise, hypotension, change in heart rate, or generalized urticaria. Hence, we did not have concerns regarding anaphylaxis.

Serum tryptase, plasma histamine, and immunoglobulin E level were not contemplated.

Since this allergic reaction occurred, we have consulted pediatric dermatologist and allergy specialist regarding safety of lip balm products and its alternatives. Our hospital is in the process of acquiring preservative-free baking oils as a suitable alternative to flavor the facemask. After extensive review at our pediatric anesthesia quality meeting, our action plan entailed education and increased awareness of providers including our child life specialist, perioperative nurses, and anesthesiologists regarding potential allergic reactions with this product. Further, we have added questions to our preanesthesia allergy questionnaire that specifically address history of allergic reaction to lip balm, cosmetics, vaccines, and antibiotic ointment (because phenoxyethanol is an ingredient in these products). Anesthesiologists need to be aware of phenoxyethanol as an ingredient in lip balms used for flavoring facemasks during inhalational induction and its potential to cause contact urticaria or anaphylaxis in the perioperative period. ■■

#### DISCLOSURES

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