



Review

Art of prevention: Practical interventions in lip-licking dermatitis

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ABSTRACT

Dry, cracked lips are a common occurrence in both cold winter months and arid climates, leading many patients to experience discomfort year-round. Lip-licking is a compensatory measure that perpetuates the condition and often leads to lip-licking dermatitis. In patients in whom this compensatory measure becomes a chronic habit, other sequelae such as irritant contact dermatitis, cheilitis simplex, angular cheilitis, factitial cheilitis, secondary infections, and exfoliative cheilitis can arise. Given the high prevalence of lip-licking and subsequent dermatitis, it is important to counsel patients on interventions to prevent associated dermatitis and treatment methods to alleviate symptoms. Practical interventions in a daily routine should include application of a bland lip balm with ultraviolet protection, adequate hydration, protection of the lips from harsh weather conditions, and recognizing when dermatitis is present and further dermatologic care is indicated.

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Introduction

Dry, cracked lips are a common occurrence in the dry winter months (and summer months in arid climates); however, many patients have these symptoms throughout the year. When lips

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are dry, chapped, or bleeding, patients will lick their lips as a compensatory measure to replenish moisture. This act momentarily alleviates the symptoms but can perpetuate the condition. In some patients, lip-licking can become a chronic habit with sequelae such as irritant contact dermatitis, cheilitis simplex, angular cheilitis, factitial cheilitis, secondary infections, and exfoliative cheilitis (Greenberg et al., 2017). The high prevalence of lip-licking underscores the importance of opportunities to counsel patients on interventions to prevent associated dermatitis and inform of treatment methods to alleviate symptoms.

Etiology of lip dryness and subsequent lip-licking

Saliva contains digestive enzymes that are detrimental to the delicate skin of the lips, leading to a breakdown of the protective

Table 1
Common conditions associated with lip-licking dermatitis, including typical clinical presentations, etiologies, and management.

Condition	Clinical presentation	Etiologies	Management
Cheilitis simplex	Dry, cracked vermillion lips; can be fissured or desquamated depending on severity	Dry climates, habitual lip-licking, irritant exposure (saliva, topical acne medications, mechanical irritation)	Prevention is key; apply bland lip balm frequently throughout the day for adequate moisturization; avoid possible irritants
Angular cheilitis	Erythema and scaling of oral commissures, commonly associated with maceration	Overexposure to saliva (drooling, medication side effect, chronic mouth breathing in allergic rhinitis), nutritional deficiencies, chronic medical conditions (diabetes, inflammatory bowel disease)	Reduce moisture and treatment of underlying etiology; consider topical antifungal versus topical corticosteroid based on clinical presentation
Ecematous cheilitis	Erythema and scaling of vermillion lips, with possible fissuring; may also involve cutaneous lip	Most commonly associated with allergens, such as propolis, acrylates, nickel, cobalt, menthol, corticosteroids, preservatives, and fragrances	Reduce lip care routine to sensitive (dye, fragrance free) products only; consider use of low-potency topical steroid twice daily for 1–2 weeks if needed; if persistent, consider patch testing
Exfoliative cheilitis	Thick desquamative scale, most commonly along the vermillion border and involving the lower lip	Unknown etiology in most cases; possible association with actinic damage, lip-licking, nutritional deficiencies, and body-focused repetitive behaviors	Attempt to diagnose and treat underlying cause; treat secondary infections (if present)
Factitial cheilitis	Cyclical peeling of keratinaceous scale, involving the vermillion lips	Repetitive behaviors, such as lip-licking, biting, sucking, or picking	Habit reversal techniques are the mainstay of management; consider cognitive behavioral therapy if associated with behavioral health condition

barrier with subsequent reduction of moisture and increased vulnerability to irritants. This combination leaves lips prone to dryness, chapping, cracking/bleeding, and peeling. Additional exacerbating factors that can lead to the development of dry lips include dry climates (with temperature highs or lows) and ultraviolet exposure. Often, patients do not realize the extent to which they are licking their lips.

There are numerous reasons why patients may chronically lick their lips. Common causes include harsh weather conditions, sunburn, anxiety, chronic dryness (patients with a history of atopic dermatitis), and chronic nasal congestion (leading to chronic mouth-breathing). Patients with a history of systemic diseases can also present with cheilitis associations, such as Sjogren syndrome, lupus erythematosus, lichen planus, pemphigoid/pemphigus, Crohn's disease, and sarcoidosis, which may also lead patients to engage in lip-licking (Lugovic-Mihic et al., 2018). In addition, certain medications such as vitamin A, diuretics, antiemetics, and chemotherapy can cause lip dryness and subsequent lip-licking (Lugovic-Mihic et al., 2018).

Sequelae of lip-licking

Chronic lip-licking leads to impairment of the epidermal barrier and subsequent dryness, cracking/bleeding, and peeling of the lips, which predisposes delicate skin to contact with irritants and subsequent dermatitis. The most common conditions associated with chronic lip-licking include cheilitis simplex, angular cheilitis, and eczematous cheilitis (Table 1; Lugovic-Mihic et al., 2018). Less common conditions that may occur include exfoliative cheilitis and factitial cheilitis (Lugovic-Mihic et al., 2018). With breakdown of the protective barrier also comes increased risk of secondary infections. In addition, it is important to realize at-risk populations which may be more prone to dermatitis, such as patients with atopic dermatitis (Zhou and Pratt, 2018).

Review of terminology and conditions

Cheilitis simplex

Cheilitis simplex (otherwise referred to as chapped lips) is a common condition, typically presenting as cracked, fissured, or desquamated lips and most often involving the lower lip (Lugovic-Mihic et al., 2018). The etiologies of cheilitis simplex range from cold/dry weather to acute or chronic/habitual lip-licking, which cause irritation and breakdown of the protective barrier of the lip. Saliva acts as a potent irritant, leading to an irritant contact dermatitis (Mini and Anoop, 2017).

Irritant contact dermatitis is defined as dermatitis related to substances that cause repeated irritation or injury to the lips. The most common irritant involved with dermatitis of the lips is saliva, as previously mentioned. Other common products that are harsh to the delicate skin of the lips include many acne medications, such as topical retinoids, salicylic acid, and benzoyl peroxide. In addition to topical products, mechanical irritation from recreational or occupational exposure can lead to irritant contact dermatitis. Common examples of this include musicians (specifically those playing wind instruments) and snorkelers/divers.

Angular cheilitis

Angular cheilitis (also referred to as perleche) is a complex condition involving the oral commissures. Skin overexposure to saliva from physiologic exposure, increased production from medications, or concurrent medical disease leads to commissural maceration (Lugovic-Mihic et al., 2018). For example, patients with

allergic rhinitis can develop angular cheilitis as a result of nasal congestion that leads to mouth breathing and pooling of saliva in the oral commissures. The increased moisture and maceration predispose to secondary colonization and biofilm development of commensal fungal or bacterial microbiota that activates the innate immune system and leads to a localized inflammatory tissue reaction (Lugovic-Mihic et al., 2018).

Nutritional deficiencies, such as riboflavin, folate, and iron (Lugovic-Mihic et al., 2018), can be seen in conjunction with angular cheilitis. Other associated conditions can include diabetes (increased susceptibility to infections) and inflammatory bowel disease (thought to be secondary to chronic inflammation, malnutrition, and side effects of medications; Lugovic-Mihic et al., 2018; Muhvic-Urek et al., 2016). Additionally, there is a need to better integrate treatment and recognition of behavioral health conditions that can affect physical health, such as trauma of the lips that can be induced from bulimia (Lugovic-Mihic et al., 2018).

Eczematous cheilitis

Eczematous cheilitis (also known as contact cheilitis) is dryness, erythema, and/or fissuring of the lips secondary to an inflammatory response to allergens in contact with the lips. Allergic cheilitis is complicated in that it may involve a mixed type I and type IV reaction from a proteinaceous substance (ie, red meat, milk, eggs; Caubet and Wang, 2011; McFadden, 2014) or a delayed hypersensitivity reaction to a detergent (ie, cocamidopropyl betaine), preservative, fragrance in topical products, or flavorant in food sources (Lim and Goh, 2000; Lugovic-Mihic et al., 2018). Some of the most common allergens in lip dermatitis include propolis (in many lip balms), acrylates (in nail polishes, acrylics), nickel/cobalt (in jewelry, instrument mouth pieces), menthol (in oral hygiene products), and corticosteroids. When lip dermatitis is persistent despite protective measures and sensitive skin care, an allergic contact dermatitis should be considered. Patch testing can be a useful diagnostic tool in this setting.

Exfoliative cheilitis

Exfoliative cheilitis is characterized by lip inflammation associated with constant desquamation of thick, keratin scale primarily affecting the vermillion border. This is most commonly found on the lower lip. Exfoliative cheilitis is less common than the previously discussed entities, and the exact etiology is unknown. Actinic damage, lip-licking, chewing, picking, psychological distress, and/or nutritional deficiencies (ie, vitamin B12 deficiency, iron deficiency) are thought to play roles in the pathogenesis (Almazrooa et al., 2013; Lugovic-Mihic et al., 2018).

Factitial cheilitis

Factitial cheilitis is caused by repetitive behaviors, such as lip-licking, sucking, biting, or picking, and leads to a cyclic peeling of excess keratin. The diagnosis of factitial cheilitis is one of exclusion because the clinical and histological presentation is relatively non-specific (Girijala et al., 2018; Lugovic-Mihic et al., 2018). Because this condition is secondary to repetitive behaviors, patients often are resistant to pharmacologic therapy. Affected patients are more likely to have underlying behavioral health conditions that are often undiagnosed or not appropriately managed. This highlights the importance of integrating treatment and recognition of behavioral health with physical health. This condition tends to be more prevalent in adolescent and young adult women (Girijala et al., 2018).

Practical intervention

Prevention is key in the management of dermatitis associated with lip-licking. Understanding the exacerbating factors leading to dryness/discomfort of the lips leads to accurate diagnosis, management, and planning of prevention strategies. Breaking the habit of chronic lip-licking is often difficult, but simple interventions in a patient's daily routine can be of significant benefit.

A daily routine for healthy, moisturized, protected lips should become common practice. Patients should be encouraged to drink adequate amounts of water and apply a bland lip balm daily, especially when lips are feeling dry (American Academy of Dermatology, 2020; Lugovic-Mihic et al., 2018). Ingredients to be aware of that may be found in lip balms and can cause contact dermatitis include fragrances and flavorants (ie, menthol, camphor, cinnamon, peppermint oil, vanilla, geraniol), beeswax, colophony, and eucalyptus, in addition to emollients (ie, lanolin, castor oil, etc) and solvents such as propylene glycol, preservatives (ie, propyl gallate) and dyes (ie, D&C Yellow #11, D&C Red #7, 17, 21, & 36, and quinazoline yellow; Dyall-Smith, 2010; Greenberg et al., 2017; Zhou and Pratt, 2018).

In addition, patients should be encouraged to apply a lip balm with a physical blocking ultraviolet protectant (titanium dioxide, zinc oxide), sun protection factor ≥ 30 when planning for sun exposure to prevent acute sunburn and protect from chronic ultraviolet radiation (Girijala et al., 2018; Greenberg et al., 2017). Chemical blockers (ie, benzophenone-3) have been shown to cause both nonphotoallergic and photoallergic contact reactions (Cheng et al., 2019). Wearing a wide-brimmed hat also provides protection for the lips in sun exposure. If exposed to dry, cold conditions, wearing clothing to protect the lips can reduce the risk of chapping.

At the first sign of lip-licking, patients should be encouraged to apply a nonirritating, bland lip balm that not only provides moisture, but also a protective barrier to the lips. Bland, nonirritating lip balms are those that contain minimal fragrances, dyes, flavorings, and other irritants. Balms that lead to discomfort when applied should be discontinued (American Academy of Dermatology, 2020). Ingredients reported to be helpful in soothing lips include ceramides, dimethicone, petrolatum, and shea butter (Almazrooa et al., 2013). In patients who are predisposed to dry lips (eg, patients living in dry climates, persons exposed during winter months, and those with a history of atopic dermatitis), preventative application of a bland lip balm multiple times per day, including before bed, is recommended (American Academy of Dermatology, 2020). In patients with a habit of chronic lip-licking, breaking the habit of lip-licking by applying lip balm instead is helpful.

When symptoms of flaking or peeling are present, patients commonly pick at, rub, or chew off the flaking skin; however, doing so can lead to cracks and sores that worsen symptoms and delay healing. It is recommended that patients avoid attempting to remove flaking/peeling skin. When the dryness is severe or cracks are present, use of a thick ointment, such as white petrolatum jelly, can be both soothing and protective from outside irritants and secondary infections, leading to improved healing. Habit reversal techniques can also be employed, including the use of relaxation (deep-breathing and muscle relaxation) and competing responses, such as gum-chewing (Jones et al., 1997) or applying lip balm. Referring patients with skin picking disorders and/or obsessive-compulsive disorder for cognitive behavioral therapy can be helpful as well.

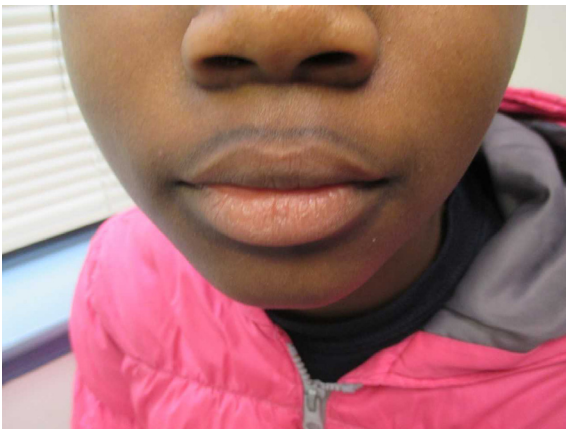
Prevention and habit reversal techniques are the mainstay of management, but it is important to realize that further evaluation and treatment may be indicated based on the etiology of lip-licking dermatitis (Table 1). In patients with severe dermatitis, the use of low-potency topical corticosteroids may be employed acutely to

reduce inflammation and allow for healing. In patients who require chronic treatment or those with a corticosteroid allergy, topical calcineurin inhibitors may be considered. It is important to prescribe these medications in ointment form to reduce pain with application. In patients with recurrent dermatitis despite prevention, habit reversal techniques, and pharmacologic therapy, consideration should be given to further evaluation for allergy (patch testing) or underlying medical conditions.

If chronic lip-licking is found to be secondary to a medication, medical diagnosis, or behavioral health condition, it is important to ensure that the patient has appropriate care from the physician prescribing the medication or treating their underlying condition. In addition, if lip dermatitis does not improve with preventative measures as outlined, it is important for the patient to see a board-certified dermatologist to rule out causes of persistent lip dermatitis, such as infection, allergic contact dermatitis, photosensitivity reaction, lichenoid mucositis, vitamin A toxicity, precancerous lesions (actinic cheilitis), or malignancy (Greenberg et al., 2017; Lugovic-Mihic et al., 2018).

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Study Approval

The author(s) confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies.

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