

# Facial Masks Vestibulitis: The Risk of Mismanagement in the COVID-19 pandemic

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**Abstract:** The COVID-19 pandemic has forced the global population to adopt several public health measures, including social distancing, environmental disinfection and use of personal protective equipment (PPE), which are still widely recommended although several vaccines are currently available. Dermatological and allergological diseases related to the extended use of the PPEs represent an emerging problem amidst the pandemic. In particular, there are increasing reports of skin damage, occupational dermatoses, Irritant Contact Dermatitis (ICD) and allergic contact dermatitis (ACD) related to surgical facemasks and N95. We report the case of a superinfected ICD of the narinal region complicated in nasal vestibulitis, characterized by purulent secretions, narinal edema and nasal obstruction, with the aim of highlighting that even the incorrect use of protective against Covid-19 transmission can cause the onset of severe diseases. ([www.actabiomedica.it](http://www.actabiomedica.it))

**Key words:** COVID-19, Facial masks, Dermatitis, Nasal vestibulitis

## Introduction

The COVID-19 pandemic has forced the global population to adopt several public health measures, including social distancing, environmental disinfection and use of personal protective equipment (PPE), which are still widely recommended although several vaccines are currently available (1). Dermatologic diseases related to the extended use of the PPEs represent an emerging problem amidst the pandemic. In particular, there are increasing reports of skin damage, occupational dermatoses, Irritant Contact Dermatitis (ICD) and allergic contact dermatitis (ACD) related to surgical facemasks and N95 (2). We report the case of a superinfected ICD of the narinal region, characterized by purulent secretions, narinal edema and nasal obstruction.

## Case Report

A 46-year-old Caucasian man with Fitzpatrick skin phototype II complained of nasal vestibule

erythema associated with itching, skin tightness and burning, progressively worsening to serous blisters. Symptoms developed after wearing the same surgical mask for multiple days to prevent contracting SARS-CoV-2. Due to the COVID-19 pandemic, the patient decided to undergo telematic dermatological consultation. The dermatologist, based on his medical history (no smoking habits, no allergies or other comorbidities) and photographic documentation, diagnosed impetiginous eczema, treated with patented *Triticum vulgare* aqueous extract. Despite the therapy, the patient reported severe itching with consequent scratching of the blisters. Progressively, he complained of the onset of narinal edema, such as to completely occlude the nostrils and cause severe nasal obstruction, associated with purulent exudate and crusting, extended to the upper lip (Fig. 1). Therefore, the patient underwent otorhinolaryngological examination, blood tests, nasal swab and maxillofacial cone beam computer tomography (CBCT) (Fig. 2). Laboratory blood tests were normal, except for increased levels of VES (VES = 18 mm/h). The nasal swab

culture revealed the presence of *Streptococcus agalactiae* susceptible to Erythromycin ( $MIC(90) \leq 0,25$  microg/mL). The CBCT showed obstructive edema of the nasal region, whereas the remaining morphology of the nasal cavity and paranasal sinuses was normal. He was then diagnosed with facemask-induced ICD and bacterial superinfection. Therefore, the patient was given oral Clarithromycin 500 mg twice daily and a topical preparation containing 0.5% Fusidic Acid and 0.1%

Betamethasone for 10 days. In addition, the patient was advised to better manage the surgical mask, in terms of hygiene and time. The lesions gradually subsided with improvement in nasal obstruction.

## Discussion

As a matter of fact, the prolonged use of facemasks, regardless of the type of mask worn, causes excessive sweating, moisture and friction and creates a microenvironment under the mask which increases skin permeability and sensitivity to physical or chemical factors irritants(3). The most described pathophysiological alterations of the skin are represented by alteration of keratinocytes, release of proinflammatory cytokines, cutaneous microbiota disorders, increased transepidermal water loss (TEWL) and pH (4). These changes can exacerbate pre-existing skin diseases and lead to the onset of ICD or, rarely, ACD. Our patient reported that he had worn the same mask for several days. Moreover, he reported that he often kept the facial mask in his car and did not apply disinfectant sprays. The dermatologist initially treated the nasal lesion with a healing cream. However, due to persistent itching, the patient developed scratching lesions, which played a crucial role in aggravating the



**Figure 1.** Nasal vestibule erythema and edema, such as to completely occlude the nostrils, associated with purulent exudate and crusting. The inflammation extends to the upper lip.



**Figure 2.** Axial CBCT sections showing edema of the nasal vestibule (A), particularly of the columella region (B).

situation. In fact, the superinfection by *Streptococcus agalactiae* probably occurred through contaminated hands. This bacterium frequently colonizes the genitourinary and gastrointestinal tract and causes invasive disease in infants (5). In this case, the infection had spread from the skin to the subcutaneous tissues causing an obstructive edema of the nostrils.

We believe that the incorrect use of the mask caused the onset of ICD first and subsequently of bacterial superinfection. In this context, in addition to pharmacological therapy, it is essential to raise awareness on the measures to prevent the paradoxical situation in which PPEs become a risk factor for various dermatoses, including changing the mask often, avoiding prolonged use, remove masks for a few minutes in case of heavy sweating and use non-comedogenic emollients before wearing masks (6).

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