

“Mask vitiligo” secondary to frictional dermatitis from surgical masks

Surabhi Sinha  | B Savitha | Kabir Sardana

Department of Dermatology & STD, Dr. Ram Manohar Lohia Hospital & ABVIMS, New Delhi, India

Correspondence

Dr. Surabhi Sinha, Dr. Ram Manohar Lohia Hospital & ABVIMS, Room No. 205, Academic Block, PGIMER Building, New Delhi 110001, India.
Email: surabhi2310@gmail.com

KEYWORDS: case report, contact leukoderma, COVID-19, irritant contact dermatitis, koebnerization, surgical mask, vitiligo

Vitiligo is a disorder of depigmentation often leading to significant social stigma, especially in people with skin of color. Mask dermatitis, though less common than glove or disinfectant-related dermatitis, is increasingly being reported during the current COVID-19 pandemic due to nearly universal mask use. Although pressure-related injuries and irritant skin reactions are most frequent, we report a case of facial vitiligo, limited to skin sites in contact with surgical masks, and likely to be due to koebnerization as a result of frictional dermatitis from the masks.

CASE REPORT

A 40-year-old female grocery shop owner presented with confluent depigmentation over her cheeks and chin. She had been using surgical masks for the past 3 months, and she usually wore the same surgical mask almost 8 hours daily for many consecutive days. The masks provoked burning facial sensations without evident dermatitis. Masks from another manufacturer could not prevent the occurrence of new,

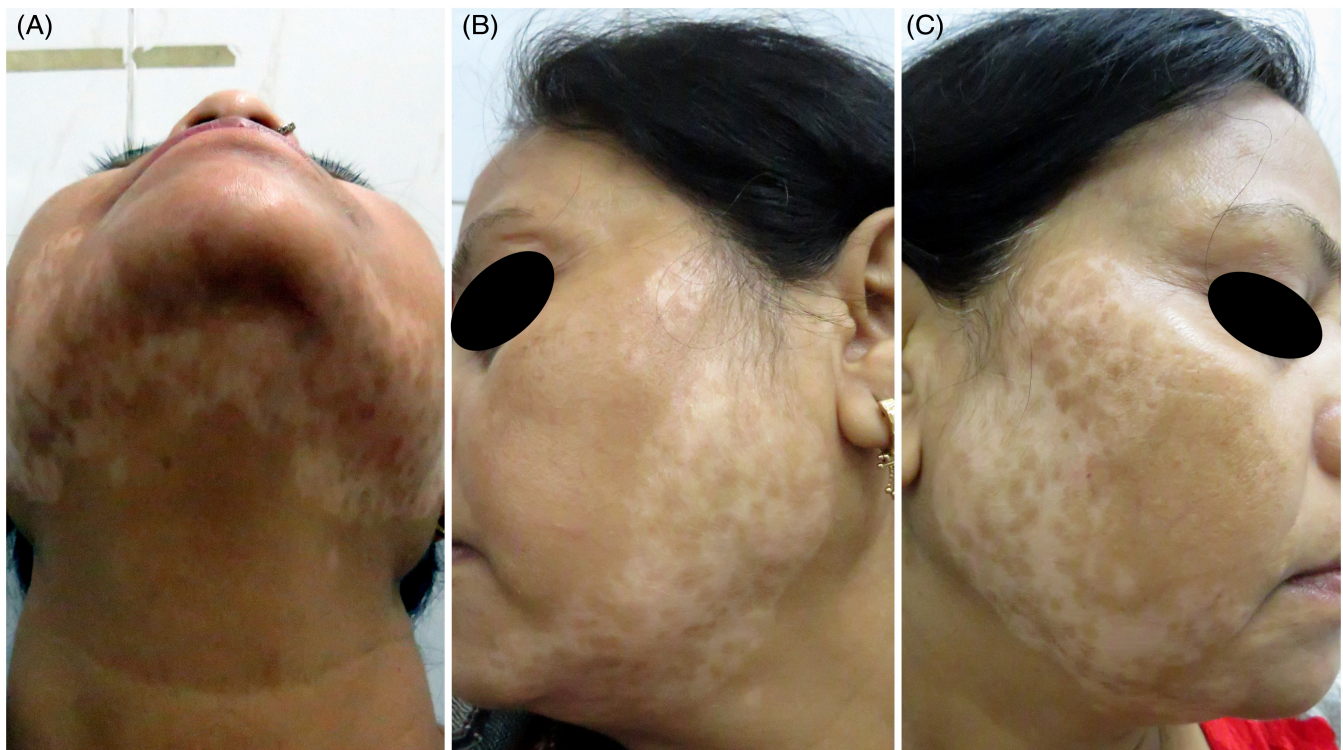


FIGURE 1 A well-demarcated band of depigmentation interspersed with macules of follicular re-pigmentation, on the (A) submental, (B) left, and (C) right mandibular areas, sparing the nose and malar areas. The affected skin sites correspond to the areas of skin contact with two types of surgical masks. Written consent from the patient has been taken to publish the photographs

depigmented skin lesions, prompting the patient to use white, triple-ply textile masks instead. There was no personal or family history of vitiligo, thyroid disease, or atopy.

On examination, a well-demarcated band of depigmentation interspersed with macules of follicular repigmentation was visible on the submental and bilateral mandibular areas, sparing the nose and malar areas (Figure 1). Upon questioning, she admitted wearing the mask mostly on her chin, or below the nose, due to discomfort. A skin biopsy from the depigmented skin showed the absence of melanocytes in the basal epidermis, together with focal pigment incontinence.

Patch tests were performed with the Indian baseline (INS-1000) and Indian cosmetic and fragrance (INC-1000) series (Chemotechnique Diagnostics), procured from Systopic Pharmaceutical Ltd, New Delhi, India, approved by Contact and Occupational Forum Of India (COFI), together with semi-open tests with saline-soaked 1-inch pieces of two types of "culprit" surgical masks.¹ Contrary to the regular patch tests, which were occluded for 2 days and read according to ICDRG criteria on day (D)2 and D4, the semi-open tests with the mask pieces were left in situ for 96 hours and read on D4 and D5, but no positive reactions were observed.

A diagnosis of frictional dermatitis from the surgical masks, with subsequent koebnerization leading to vitiligo, was thus put forward. Alternatively, given the burning facial sensations (yet without signs of dermatitis), a contact leukoderma following irritant contact dermatitis was still a potential differential diagnosis. Unfortunately, despite repeated requests, the manufacturers did not respond to our queries regarding the exact chemical composition of the masks, hence we cannot fully exclude that skin irritants present in the masks might have also been involved.

We advised our patient to continue the correct use of white textile masks, along with the daily application of tacrolimus on the affected areas. After 12 weeks the depigmented macules showed significant re-pigmentation.

DISCUSSION

The COVID-19 pandemic has resulted in the widespread and overzealous use of personal protective equipment (PPE) and disinfectants by the general population, leading to a high incidence of adverse cutaneous reactions.²⁻⁴ Conversely to gloves and hand sanitizers, the wearing of masks is a less reported cause of skin problems, although prolonged use may cause skin reactions through excessive moisture and constant friction.³ Skin lesions may be pressure related (abrasions, frictional dermatitis), acneiform ("maskne"), or urticarial, irritant, or allergic in nature.⁴⁻⁷ Most adverse reactions concern N95 (FFP2) masks, rather than surgical masks, owing to their greater impermeability and tighter fit.⁵ Depigmentation, manifesting as a contact leukoderma, or, as in this case, a vitiligo

following koebnerization from frictional dermatitis, appears to be a rare consequence of mask use.

Koebnerization occurs in 21%–62% patients with vitiligo and implies the development of depigmented lesions at sites of skin trauma.⁸ It is considered frequent in progressive vitiligo vulgaris, and hence may indicate disease activity.⁸ Van Geel et al proposed three distinct types of koebnerization in vitiligo, and our case is probably an example of Type 2A, that is, vitiligo clinically corresponding to an area of repeated pressure or friction induced by the wearing of clothes or accessories (ie, a surgical mask).⁹ Perifollicular re-pigmentation, as seen in vitiligo, was also observed in our case.

To conclude, clinicians should be aware that "mask vitiligo", resulting from koebnerization from frictional dermatitis due to the wearing of surgical masks, may occur.

CONFLICT OF INTEREST

The authors declare no conflict of interests.

AUTHOR CONTRIBUTIONS

Surabhi Sinha: Conceptualization; investigation; writing-original draft; writing-review & editing. **Savitha B:** Visualization; writing-original draft. **Kabir Sardana:** Conceptualization; formal analysis; writing-original draft; writing-review & editing.

ORCID

Surabhi Sinha  <https://orcid.org/0000-0002-0423-7588>

REFERENCES

- Jolanki R, Estlander T, Alanko K, Kanerva L. Patch testing with a Patient's own materials handled at work. In: Kanerva L, Wahlberg JE, Elsner P, Maibach HI, eds. *Handbook of Occupational Dermatology*. Berlin, Heidelberg: Springer; 2000;375-383.
- Sinha S, Sardana K. Contact leukoderma following irritant contact dermatitis to an isopropanol-based hand rub: a consequence of rigorous hand hygiene. *Contact Dermatitis*. 2020. <https://doi.org/10.1111/cod.13743>
- Bhatia R, Sindhuja T, Bhatia S, et al. Iatrogenic dermatitis in times of COVID-19: a pandemic within a pandemic. *J Eur Acad Dermatol Venereol*. 2020;34(10):e563-e566. <https://doi.org/10.1111/jdv.16710>
- Yu J, Chen JK, Mowad CM, et al. Occupational dermatitis to facial personal protective equipment in health care workers: a systematic review. *J Am Acad Dermatol*. 2020. <https://doi.org/10.1016/j.jaad.2020.09.074>
- Foo CCI, Goon ATJ, Leow YH, Goh CL. Adverse skin reactions to personal protective equipment against severe acute respiratory syndrome (SARS) – a descriptive study in Singapore. *Contact Dermatitis*. 2006;55(5):291-294.
- Al Badri FM. Surgical mask contact dermatitis and epidemiology of contact dermatitis in healthcare workers. *Curr Allergy Clin Immunol*. 2017;30(3):183-188.
- Xie Z, Yang YX, Zhang H. Mask-induced contact dermatitis in handling COVID-19 outbreak. *Contact Dermatitis*. 2020;83(2):166-167. <https://doi.org/10.1111/cod.13599>

8. Khurram H, AlGhamdi KM, Bedaiwi KM, AlBalahi NM. Multivariate analysis of factors associated with the Koebner phenomenon in Vitiligo: an observational study of 381 patients. *Ann Dermatol*. 2017;29(3): 302-306.
9. van Geel N, Speeckaert R, Taieb A, et al. Koebner's phenomenon in vitiligo: European position paper. *Pigment Cell Melanoma Res*. 2011;24(3): 564-573. <https://doi.org/10.1111/j.1755-148X.2011.00838.x>

How to cite this article: Sinha S, Savitha B, Sardana K. "Mask vitiligo" secondary to frictional dermatitis from surgical masks. *Contact Dermatitis*. 2021;85:121-123. <https://doi.org/10.1111/cod.13813>