# Mask Phenomenon Post-Bronchoscopy: Case Report with Literature Review

Balqis Al Saadi[1]*, Zainab Al Lawati[2], Aya Al Lamki[1], Zamzam Said Al Qutati[1] and Omaima Abdullah Al Kamyani[3]

[1]Dermatology Residency Training Program, Oman Medical Specialty Board, Muscat, Oman

[2]Dermatology Department, Al-Khuwair Dermatology Centre, Muscat, Oman

[3]General Foundation Program, Oman Medical Specialty Board, Muscat, Oman

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*Corresponding author: bulqees94@gmail.com

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## *Abstract*

Facial purpura can result from rheumatological, dermatological, infectious, traumatic, and benign causes. We report the case a 60-year-old woman who, after undergoing a bronchoscopy procedure, developed a petechial rash on her face and neck, as well as subconjunctival hemorrhage. Her condition spontaneously resolved within a week. Notably, only three previous cases have been reported in the literature, highlighting the rarity of this phenomenon.

***Keywords:*** Facial Dermatoses; Purpura; Bronchoscopy, Adverse Effects; Oman.

## Introduction

Purpura refers to distinctive red or purple discoloration of the skin and mucous membranes caused by subdermal bleeding. Facial purpura can result from various rheumatological, dermatological, infectious, and traumatic causes.[1] Emergent intervention is warranted if the purpura is secondary to underlying vascular, coagulopathic, or neoplastic conditions.[2] Nonetheless, several benign etiologies have been documented, such as violent coughing, vomiting, or following Valsalva maneuver, often referred to as the 'mask phenomenon'.[3] This case report details a rare instance of extensive facial and neck petechiae with subconjunctival hemorrhage following bronchoscopy in a patient without any known predisposing factors. Despite the benign and self-resolving nature of this complication, it caused significant discomfort to the patient and necessitated further investigations to rule out other underlying conditions.

## Case Report

A 60-year-old woman presented to our facility with a history of chronic bronchiectasis, diabetes mellitus, and dyslipidemia, but no known allergies. She was not on anticoagulation or antiplatelet therapy and was a non-smoker and non-drinker. She was currently undergoing nebulization therapy for recurrent chest infections, prompting the need for a bronchoscopy to investigate these atypical infections. The procedure, involving nasal intubation, was performed with 2 mg of intravenous midazolam and 50 μg of fentanyl, without intranasal lignocaine. Notable findings included right vocal cord nodularity and significant secretion in both lungs, with no erythema or ulceration observed. The procedure lasted 15 minutes without any intraoperative complications.

Immediately post-procedure, the patient developed a non-blanching petechial rash over her face and anterior neck, accompanied by subconjunctival hemorrhage [Figure 1]. Despite these symptoms she remained hemodynamically stable. Three days later she returned with the same complaints and sought emergency dermatological care. Investigations revealed normal platelet and coagulation profiles, and the patient was reassured regarding the benign nature of her condition, which gradually subsided within a week of onset.

**Figure 1:** Clinical photographs of the neck and face of a 60-year-old woman showing a non-blanching petechial rash that appeared immediately following a bronchoscopy procedure.

## Discussion

The etiology of purpura can be broadly categorized into conditions primarily or secondarily associated with vasculitis or thrombocytopenic, neoplastic, infectious, or toxic origins.[2] Nonetheless, identifying the precise cause is often challenging, potentially leading to anxiety for patients and diagnostic uncertainty for physicians.[4] Among various manifestations, mask phenomenon represents a unique type of purpura characterized by its occurrence in the relatively loose tissues of the face and neck.[3] This condition typically arises following activities that significantly increase intrathoracic or abdominal pressure—such as prolonged coughing, intense vomiting, the Valsalva maneuver, or childbirth—leading to capillary rupture within the dermis.[5] Although the onset is sudden, the condition tends to resolve spontaneously within 24 to 72 hours, often without the need for an extensive work-up for coagulation or platelet abnormalities.[1,4]

Bronchoscopy is a pivotal diagnostic and therapeutic procedure for clinicians seeking to manage pulmonary diseases. While common complications include pulmonary hemorrhage, desaturation, pneumothorax, and pulmonary edema, the occurrence of mask phenomenon is seldom reported.[6,7] Mask phenomenon has been also reported in endoscopic procedures, attributed to increased intrathoracic pressure.[8,9] A diagnosis of endoscopy-related purpura involves the exclusion of vasculitic, coagulopathic, neoplastic, infectious, or other causes. The key features include the absence of vasculitis or coagulopathies in the patient's medical history, normal bloodwork, superficial lesions such as petechiae with a predominantly facial and/or neck distribution appearing during or soon after the endoscopic procedure, and spontaneous resolution of the rash within 7–10 days.[4]

Our literature review identified only three similar cases of mask phenomenon occurring soon after bronchoscopy, underscoring the rarity of this complication [Table 1].[4,10] Commonalities among these cases include the absence of vasculitis or coagulopathies, normal laboratory findings, and spontaneous regression of the rash within a week's time or sooner. Although facial and neck petechiae post-bronchoscopy has a rather dramatic clinical presentation, the natural history is relatively benign and self-limiting; hence, physicians and patients faced with the condition need not be alarmed.[4]

**Table 1:** Literature review of reported cases of facial purpura post-bronchoscopy[4,10]

| Author (year) | Patient age and sex | Comorbidities | Procedure and indication | Complications | Sedation | Use of anti-platelets, anticoagulants, or | Clotting profile | Clinical description of lesion | Time to initiation | Time to resolution | Treatment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aw *et al*.[4] (2016) | 60/F | Allergic rhinitis and asthma | Bronchoscopy to rule out foreign body obstruction and airway toilet | Retching and coughing | 5 mg of IV midazolam and 50 µg of fentanyl | None | Normal | Petechial rash on face and neck | 1 hour | 2 days | None |
| Aw *et al*.[4] (2016) | 27/M | HTN and vocal cord chemical burn | Bronchoscopy with BAL to rule out infection | None | 5 mg of IV midazolam and IN lignocaine | Naproxen | Normal | Petechial rash on face and neck | 2 hours | 7 days | None |
| Bik *et al*.[10] (2019) | 69/F | HTN, stroke, and arterial vascular disease | Suspected lung tumor | Excessive coughing | Unknown | Heparin | Unknown | Facial purpura | 2 hours | 5 days | None |
| Present case (2023) | 60/F | Bronchiectasis | Bronchoscopy to investigate recurrent chest infections | None | 2 mg of IV midazolam and 50 µg of fentanyl | None | Normal | Bilateral subconjunctival hemorrhage and diffuse facial and neck petechiae | Immediately | 7 days | None |

Note. *NSAIDs: non-steroidal anti-inflammatory drugs; F: female; IV: intravenous; M: male; HTN: hypertension; BAL: bronchoalveolar lavage; IN: intranasal.*

## Conclusion

The differential diagnosis of facial and neck purpura is extensive, encompassing rheumatologic, dermatologic, infectious, and traumatic causes. Recognizing benign causes of facial purpura, such as the mask phenomenon, is essential to avoid unnecessary tests and to reduce anxiety in patients. Moreover, as this condition can arise as a bronchoscopy-related adverse event, it should be considered in patient management and counseling.

## Disclosure

The authors declare no conflicts of interest. Informed consent was obtained from the patient.

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