

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

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## Abstract

*Purpura* is defined as the extravasation of erythrocytes into the dermis. Facial *purpura* can result from rheumatological, dermatological, infectious, and traumatic causes. In addition, various benign causes have been identified, such as violent coughing, vomiting, or following Valsalva's manoeuvre; such cases are frequently grouped together under the umbrella term "mask phenomenon". We report a 60-year-old female patient who developed a petechial rash on her face and neck, as well as subconjunctival haemorrhage, after undergoing a bronchoscopy procedure due to recurrent chest infections. Spontaneous resolution of the condition occurred within one week, without the need for intervention. Notably, only three previous cases have been reported in the literature, highlighting the infrequent occurrence of this phenomenon.

**Keywords:** Facial Dermatoses; Purpura; Bronchoscopy, adverse effects; Case Report; Oman.

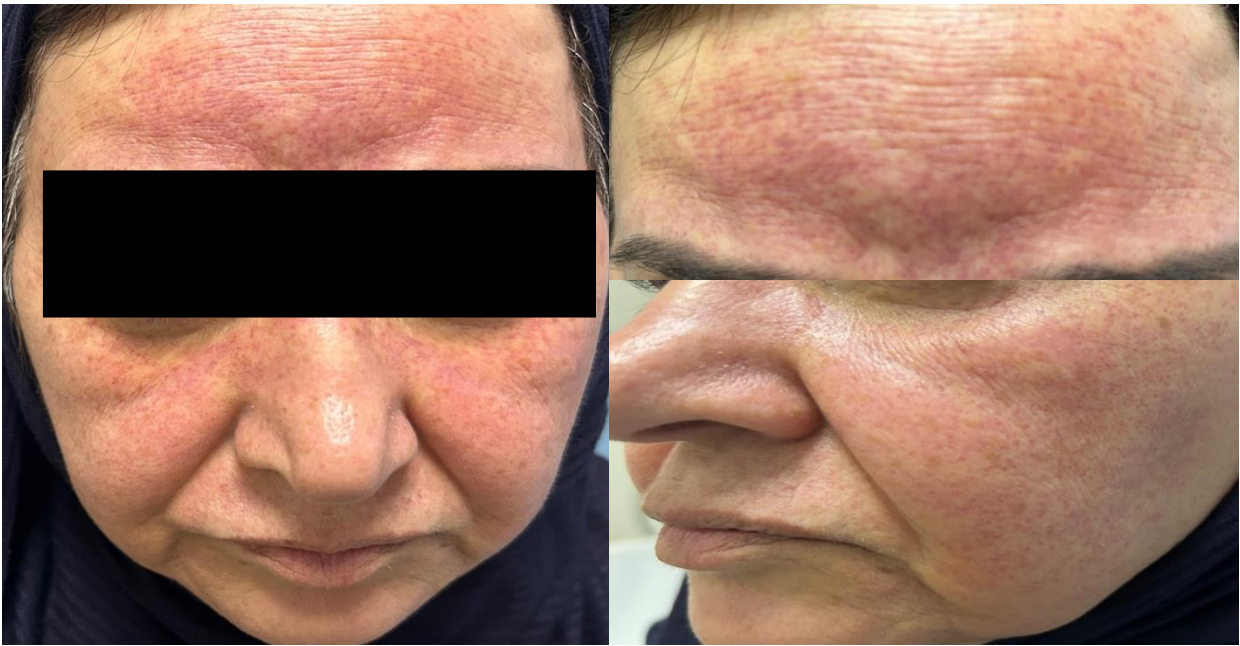
## Introduction

Originating from the Latin word for "purple", *purpura* refers to distinctive skin and mucous membrane discolouration resulting from the extravasation of red blood cells into the dermis. Facial *purpura* can result from various rheumatological, dermatological, infectious, and traumatic causes.<sup>1</sup> Emergent therapeutic intervention is warranted if the *purpura* is secondary to underlying vascular, coagulopathic, or neoplastic conditions.<sup>2</sup> Nonetheless, several benign aetiologies have been documented, often referred to as "mask phenomenon".<sup>3</sup> This case report details a rare instance of extensive facial and neck petechiae with subconjunctival haemorrhage following bronchoscopy in a patient without any known predisposing factors. Despite the benign 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 dyslipidaemia, but no known allergies. She was not on anticoagulation or antiplatelet therapy and was a non-smoker and non-drinker. She was currently undergoing nebulisation 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.

However, immediately post-procedure, the patient developed a non-blanching petechial rash over her face and anterior neck, accompanied by subconjunctival haemorrhage [Figure 1]. Despite these symptoms, she remained haemodynamically stable. She sought emergency dermatological care three days later with the same complaints. 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 appearing immediately following a bronchoscopy procedure.

## Discussion

The aetiology of *purpura* can be broadly categorised into conditions primarily or secondarily associated with vasculitis or thrombocytopenic, neoplastic, infectious, or toxic origins.<sup>2</sup> Nonetheless, identifying the precise cause is often challenging, potentially leading to anxiety for patients and diagnostic uncertainty for physicians.<sup>4</sup> Among various manifestations, mask phenomenon represents a unique type of *purpura* characterised by its occurrence in the relatively loose tissues of the face and neck.<sup>3</sup> This condition typically arises following activities that significantly increase intrathoracic or abdominal pressure—such as prolonged coughing, intense vomiting, the Valsalva manoeuvre, or childbirth—leading to capillary rupture within the dermis.<sup>5</sup> 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.<sup>1,4</sup>

Bronchoscopy is a pivotal diagnostic and therapeutic procedure for clinicians seeking to manage pulmonary diseases. While common complications include pulmonary haemorrhage, desaturation, pneumothorax, and pulmonary oedema, the occurrence of mask phenomenon is seldom reported.<sup>6,7</sup> Mask phenomenon has been also reported in endoscopic procedures, attributed to increased intrathoracic pressure.<sup>8,9</sup> A diagnosis of endoscopy-related *purpura* involves the exclusion of vasculitic, coagulopathic, neoplastic, infectious, or other causes. The main 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.<sup>4</sup>

A literature review identified only three similar cases of mask phenomenon occurring soon after bronchoscopy, underscoring the rarity of this complication [Table 1].<sup>4,10</sup> 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.<sup>4</sup>

**Table 1:** Literature review of reported cases of facial *purpura* post-bronchoscopy<sup>4,10</sup>

Author and year of case report	Age/ gender of patient	Comorbidities	Procedure and indication	Complications	Sedation	Use of anti-platelets/ anticoagulants/ NSAIDs	Clotting profile	Clinical description of lesion	Time to initiation	Time to resolution	Treatment
Aw <i>et al.</i> <sup>4</sup> (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 <i>et al.</i> <sup>4</sup> (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 <i>et al.</i> <sup>10</sup> (2019)	69/F	HTN, stroke, and arterial vascular disease	Suspected lung tumour	Excessive coughing	Unknown	Heparin	Unknown	Facial <i>purpura</i>	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 haemorrhage and diffuse facial and neck petechiae	Immediately	7 days	None

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. It is crucial for physicians to recognise benign causes of facial *purpura*, such as mask phenomenon, to avoid unnecessary diagnostic procedures and to alleviate potential stress and anxiety in patients stemming from its alarming clinical appearance. Moreover, given that this complication can arise as a bronchoscopy-related adverse event, it warrants clinician consideration in the management and counselling of patients undergoing this procedure.

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