

**Case Report***Copyright © All rights are reserved by Arda Özdemir*

Pressure Ulcer on the Nose Due to Medical Mask Use: A Case Report

Arda Özdemir**TC Siirt Research and Education Hospital, Siirt, Turkey***ORCID ID:** <https://orcid.org/0000-0002-9959-7315>***Corresponding author:** Arda Özdemir, TC Siirt Research and Education Hospital, Siirt, Turkey.**Received Date:** November 27, 2024**Published Date:** December 05, 2024**Abstract**

During the COVID-19 pandemic, extensive mask usage, particularly among healthcare workers and patients in intensive care units, can lead to pressure injuries on the facial area. This case report presents a 45-year-old male patient who developed a nasal pressure ulcer due to prolonged mask use and prone positioning. The patient consulted the plastic surgery clinic due to a nasal ulcer caused by mask pressure. This case highlights the need for careful monitoring of pressure injuries associated with medical mask use, especially in situations requiring long-term mask wearing. Plastic surgery intervention appears to provide an effective solution for treating such pressure injuries.

Introduction

The COVID-19 pandemic, caused by the SARS-CoV-2 virus that emerged in 2019, has led to one of the largest outbreaks in history worldwide [1]. One of the most crucial measures to control the pandemic has been the use of masks. During the pandemic, many people required hospitalization, and numerous patients had to be monitored in intensive care units. There has been an increase in the incidence of pressure ulcers in patients hospitalized in intensive care units, and these patients have been consulted with Plastic, Reconstructive, and Aesthetic Surgery clinics due to pressure ulcers beyond the usual level. Patients were periodically monitored in the prone position, regardless of whether they were intubated, to increase oxygen saturation [2].

Pressure ulcers can occur in the body due to impaired blood flow caused by external forces exceeding tissue pressure [3]. The location of pressure ulcers is also determined by the area of

contact pressure on the body and the soft tissue resistance between the skin and bone tissue in the contact area [4]. Pressure ulcers, typically occurring in the ischial, sacral, and trochanteric areas, led to pressure ulcers in unusual areas during the COVID-19 pandemic [1, 4]. This case report presents a Stage 4 pressure ulcer on the nose associated with medical mask use in a patient admitted to the intensive care unit due to COVID-19 pneumonia.

Case Report

A 45-year-old male patient was consulted with the Plastic, Reconstructive, and Aesthetic Surgery clinic due to a Stage 4 pressure ulcer on the nose. On inspection, a tissue defect measuring approximately 26 x 32 mm was observed at the midline of the nasal dorsum, surrounded by erythema, with exposed nasal bones and periosteum at the base.



Figure 1: Appearance of the patient at the time of admission.

In the patient's medical history, it was noted that aside from hypertension, there was no known additional illness. He presented to the Pulmonology department with cough and shortness of breath, where he was initially monitored in a general ward for 4 days and subsequently in the intensive care unit for 14 days. After improvement in his general condition, he was transferred back to the general ward. The patient stated that the ulcer on his nose

was not present in the general ward but began to enlarge during intermittent intubation monitoring in the ICU. Further history revealed that the patient had no previous history of skin cancer.

Initially, a four-quadrant biopsy was taken from the defect to rule out malignancy. Since the biopsy showed no malignancy and there was bone exposure, a repair with a local flap under local anesthesia to cover the bone tissue was planned for 5 days later.



Figure 2: Schematic representation of the planned glabellar and Rieger flaps for the patient.

Although repair under local anesthesia was planned for the patient, he did not come to the hospital on the day of the operation. Upon contacting the Pulmonology department, which had referred the patient to us, it was learned that the patient had passed away due to an acute myocardial infarction.

Discussion

The COVID-19 pandemic has clearly demonstrated the impact of pressure ulcers associated with medical devices [5]. With the increased use of personal protective equipment, including face masks, continuous positive airway pressure (CPAP) masks, and other devices, the incidence of device-related facial pressure ulcers has sharply risen among both healthcare workers and patients [6]. Although healthcare workers can pay attention to self-care, there has been a significant increase in pressure ulcers among patients monitored in intensive care units, both from bed contact and from the use of protective and oxygenation-providing medical devices such as masks [5].

A significant portion of COVID-19 cases developed severe pneumonia and acute respiratory distress syndrome (ARDS), leading to decompensation due to hypoxemia and respiratory failure [1]. The prone position helps increase oxygen saturation by allowing for better lung ventilation, increased end-expiratory lung volume, and reduced alveolar shunt [1, 7]. To be effective, the prone position must be maintained for 10-12 hours, which can lead to prolonged pressure points on the facial area where medical devices, such as masks, make contact, resulting in ischemic lesions [7]. The patient mentioned in this case report was also kept in the prone position for 2-3 days due to a drop in oxygen saturation.

Various precautions should be taken to prevent pressure ulcers in intensive care patients. Important measures include periodic turning and repositioning of the patient to reduce pressure, use of gel mattress supports, air mattresses, and regular skin inspections throughout the body [8]. Attention should be paid to the points where the endotracheal tube contacts the corner of the lips and to the areas where cloth or padding used to secure the tube to the face contacts the skin [9]. Despite all these precautions, during the pandemic, widespread skin damage could not be prevented in patients' nostrils, tongue, lips, and the urethral mucosa due to the use of urinary catheters [10].

Pressure ulcers on the face are generally due to prolonged skin pressure, which is the classic common mechanism of pressure ulcers. However, considering severe COVID-19 pneumonia, hypoxemia, microvascular damage, and thrombosis have also been shown to play a role in the mechanism of pressure ulcers. Hypoxemia leads to reduced peripheral perfusion, including skin nutrition. Another facilitating factor for pressure ulcers is the nutritional status of the patients. Studies from Spain have shown that ICU patients with low prealbumin levels during the pandemic had a higher risk of developing pressure ulcers [11].

The most crucial step in treating pressure ulcers is eliminating the pressure point on the wound [11]. This should be followed by debridement of necrotic tissue and local wound care with antibiotic

dressings materials. In cases of thrombotic microvascular damage syndrome due to COVID-19, anti-complement therapy and/or anticoagulants may play a role [11]. Facial pressure ulcers can lead to unwanted scars, hyperpigmentation, or keloids and may require additional surgical procedures.

Conclusion

To prevent this complication, intensive care staff should be alerted and receive adequate training. Prone positioning should be supervised and regularly monitored by nursing staff familiar with this technique. Considering the importance of preventing pressure ulcers in this patient group, adopting a focused prevention strategy—incorporating skin assessment and care, pressure reduction, pressure distribution, and preventive dressings—can contribute to a reduction in the incidence and prevalence of these largely preventable ulcers.

Acknowledgement

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Conflict of Interest

No conflicts of interest to disclose.

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