Abstract: On intensive care units, continuous pressure of a ventilation mask on the nasal skin may produce ulcers in unconscious patients. This paper presents a pressure ulcer that developed in an unusual position on the nasal bridge due to the use of a ventilation mask, and its subsequent treatment.

Key words: intensive care unit, ventilation mask, pressure ulcer, nasal bridge, Limberg flap, debridement

Noninvasive ventilation support with a ventilation mask obviates the use of intubation and reduces mortality due to respiratory failure.1,2 Especially on intensive care units, where patients are more likely to be in a sedated state, continuous pressure of the mask on the nasal skin may produce ulcers in unconscious patients. This paper presents a pressure ulcer that developed in an unusual position on the nasal bridge due to the use of a ventilation mask.

Case Report

A 54-year-old man was admitted to the authors’ department with a sore in the dorsal nasal region. He had a 12-year history of chronic obstructive pulmonary disease and was a former smoker. The patient had been diagnosed with chronic respiratory failure. He presented to the emergency service with coughing, purulent sputum, stridor, and respiratory failure. He underwent treatment in the intensive care unit for 2 weeks while he was unconscious. No endotracheal intubation was performed during this period; rather, respiratory support was provided via a ventilation mask.

Clinical examination revealed a 14 mm × 7 mm stage 4 pressure ulcer on the nasal bridge with exposed nasal bones (Figure 1). The patient underwent surgical treatment under local anesthesia with sedation. After debriding the necrotic skin, the exposed bone was covered with a Limberg flap harvested from the glabellar region (Figure 2). No nasal mask was allowed during the postoperative period to ensure optimal healing. An intranasal ventilation device was used for respiratory support. Postoperatively, the flap survived and the wound healed uneventfully (Figure 3).
Discussion

Appropriate placement of the ventilation mask is key to the success of noninvasive ventilation treatment. Hence, straps are used to hold the mask in position. The straps must be under appropriate tension; loose straps can cause air to leak, whereas excessively tight straps can lead to the development of skin lesions and pressure ulcers over the nasal bridge.\textsuperscript{2-5} Pressure, friction, or shear forces may also cause pressure ulcers.

The proximal dorsal nasal skin is thin, delicate, and sensitive to trauma. Moreover, the skin of older patients is fragile, inelastic, and easily injured. The thin dorsal nasal skin is more pressure-sensitive because there is little dorsal nasal soft tissue present between bone and skin. Elderly patients with respiratory insufficiency who are given respiratory support with a mask can develop pressure ulcers within a short period of time. Especially on intensive care units, any reduction in patient consciousness may be an additional risk factor for the development of a pressure ulcer over the nasal bridge.

Conclusion

When compatible with the patient’s condition, non-invasive respiratory support is preferable to intubation. Pressure ulcers on the nasal bridge of patients, especially individuals who are unconscious, can be avoided with clinicians’ attention to proper placement and fit of the ventilation mask.

Identifying risk factors, such as a patient who is elderly, or who is experiencing any reduction in consciousness, can help focus the prevention efforts of health care providers.

References


