

## Nasal versus oronasal continuous positive airway pressure masks for obstructive sleep apnea: is this really a key point of effectiveness?

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Dear Editor,

Bakker et al. analyzed that changing from a nasal to oronasal mask increased leak and residual apnea–hypopnea index (AHI) without an influence on the therapeutic pressure requirement in obese patients with obstructive sleep apnea (OSA) [1]. The findings of the current study highlight mask leak as the major difficulty in the use of oronasal masks.

We read with interest this study that revealed if there is a variation in pressure levels in patients with OSA by changing the type of facial nasal interface. The authors in this study provide original observations with important implications for the effectiveness of treating patients with OSA and continuous positive airway pressure (CPAP) [1]. However, there are some aspects that may be of interest to perform an analysis, especially those related to the possible pathways of controlling these changes in pressure and residual leak levels.

It is somehow confusing that changing from a nasal to oronasal mask increased leak and residual AHI but did not affect the therapeutic pressure requirements. Every CPAP machine has its own leak compensation mechanism.

According to the mask type (expiration valve), leak varies and pressure requirements changes [2, 3]. The authors did not explain this issue.

Firstly, the authors did not analyze the factor of internal dead mask space that are specific and different for facial and nasal masks, and are considerably higher in the latter, and may contribute to the control of hypercapnia and leak levels [4].

Secondly, we know that leak levels may be influenced by the type of exhalation port that is specific to each mask design [4]. However, the authors believe that this is an issue not relevant, if we think that it may be relevant, especially if you add the effect of compensation capability of the mechanical ventilator and anatomical characteristics of the patient that may be variable [5]. However, we agree with the authors that, in the concept of leakage, there is insufficient evidence regarding the recommended value—its concept is more dependent on the characteristic that makes the application of CPAP—and the severity and vulnerability of patients with CPAP, and it must consider statistical differences of the clinical implications [4]. We believe that there is really an influence on the comfort and sleep quality of the patient when they involve patient-ventilator asynchrony and a loss or failure to meet the targets of CPAP [6].

Third, some noninvasive mechanical ventilators may be influenced by the type of mask and volume tidal measurement that influence positive pressure and leak compensation [3–5]. However, such factors were not discussed by the authors, and these factors may explain the observed differences.

Fourth, the study does not point out whether the observed effects have significant influence in the control of AHI and other parameters of sleep quality and time of observation

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and, consequently, influence in CPAP compliance and consequences.

The mask factor attachment and adjusting pressure level when performing a facial model change can lead to a displacement of the mandible and increase in the resistance of the upper respiratory tract, increasing higher the pressure levels of leakage, hypoventilation, and increased AHI index.

Th oronasal mask is preferable for mouth breathers and for the patients with nasal pathology [6]. This study does not reveal the nasal pathology. This is the major limitation of the study and may affect the generability of the results of this study.

We believe that the results and conclusions of the study are very important for optimizing the results and reinforce the interface or mask factor as a key element in the CPAP in patients with OSA; however, we think that it is important to validate these observations for other model interfaces and incorporate other parameters discussed previously to evaluate their final impact.

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