Treatment of Obstructive Sleep Apnea
Choosing the Best Interface

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KEYWORDS

• OSA • CPAP interface • Nasal mask • Mask fitting • PAP initiation • PAP compliance • Mask leak

KEY POINTS

- Difficulty with the mask interface is common and no one type of mask is clearly superior. Changing mask type or improving fit to can dramatically improve adherence and satisfaction.
- Trying several mask types and sizes may improve mask seal and comfort; fitting a mask under pressure is suggested (ideally with the patient reclining).
- An oronasal mask may be useful in patients with mouth leak or severe nasal congestion; however, a higher pressure may be needed when switching from a nasal mask to an oronasal mask.
- Hybrid masks may be helpful in patients who could benefit from an oronasal mask but in whom claustrophobia or obtaining a good seal around the upper nose is difficult.
- Proper adjustment, cleaning, and replacement are important for maintaining a good seal. When a mask worked initially but begins to leak over time, the cushion may have deteriorated.

OVERVIEW

There is a range of interface or mask options available for delivering positive pressure therapy in obstructive sleep apnea (OSA). These include masks that fit into the nostrils (nasal pillows) or that cover the nose (nasal mask), are inserted into the mouth, cover both the nose and the mouth (oronasal mask or full face mask), or even the entire face (total face mask or helmet).[1–3] Adherence to continuous positive airway pressure (CPAP) is a crucial aspect of therapy and the benefits of positive airway pressure (PAP) are most evident in patients who comply with treatment and have longer durations of CPAP use. Nevertheless, an estimated 46% to 83% of patients are nonadherent with CPAP when compliance is defined as usage for 4 or more hours a night.[2] Predictors of adherence to CPAP therapy include the severity of OSA, the degree of daytime sleepiness, the socioeconomic status, the level of patient understanding of the therapy, and the type of mask used.[3]

It can be challenging to find a mask that fits well and is, at the same time, comfortable to wear. Patients receiving nasal CPAP often complain about side effects related to mask fit such as eye irritation owing to air leak into the eyes, skin reactions to the cushion material, pain or abrasion to the

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bridge of the nose, residual imprints on the face in the morning owing to pressure from mask or straps, or pressure sores and noisy air leaks, all of which reduce the tolerability of treatment. A change in mask type or size may be a required to intervene for these problems. Changes in interface may also be needed if the patient develops chronic skin irritation at the point of contact with the mask, if changes in the patient's weight that compromise the mask's fit, or if increases in pressure lead to increased leak issues.[1] For patients who experience symptomatic mouth leak while wearing a nasal mask, the addition of a chin strap or change to an oral nasal interface may be helpful.

MASK TYPE

A nasal mask is usually the first interface tried for PAP titration and treatment (Fig. 1). The biggest challenge with a nasal mask is providing a comfortable seal around the nasal bridge. Given the large variability in the shape and size of noses and the associated nasal bridge, it is not surprising that several masks must often be tried before a satisfactory seal can be obtained. Air leak into the eyes is poorly tolerated by patients. For a nasal mask to work well, the patient must be able to breathe nasally with the mouth closed. If more than a mild degree of expiratory venting through the mouth occurs during sleep, this may result in dryness or arouse the patient frequently. Oronasal masks are an alternative interface that can be used for patients with significant nasal congestion and predominant oral breathing or those with a large mouth leak during sleep.[4] However, an oronasal interface must seal over a large area, which can make finding a good fit very difficult in some patients. In edentulous patients, there is a lack of structural support under the lower face for oronasal masks. In these patients, oronasal masks may compress soft tissues and create an air leak. Several studies have found that oronasal masks generally require a higher treatment pressure than nasal masks and are associated with higher leak or a higher residual apnea–hypopnea index. In an occasional patient, a substantially lower pressure may be effective with a nasal mask compared with a full face mask.[5] It has been hypothesized that use of an oronasal mask may cause the jaw or tongue to move posteriorly, narrowing the upper airway. In addition, some patients may not tolerate an oronasal mask owing to claustrophobia or difficulty obtaining a mask seal. Hybrid masks, which use nasal pillows or a nasal cradle combined with a portion of the mask covering the mouth may be a solution in some patients. Only the lower part of the nose fits down into the cradle, the bottom of which contains an opening hole, allowing air to enter and leave the nares. This type of mask also avoids the need to maintain a seal in the nasal bridge area. For example, the Amara View (Philips Respironics, Murrysville, PA; Fig. 2) uses a nasal cradle cushion on top of a portion of the mask that covers the mouth.

Nasal pillows consist of 2 nasal inserts and have emerged as an alternative to nasal masks because they are smaller and have less contact with the face.[3] CPAP applied through nasal pillows and a nasal mask are equally effective in treating mild,

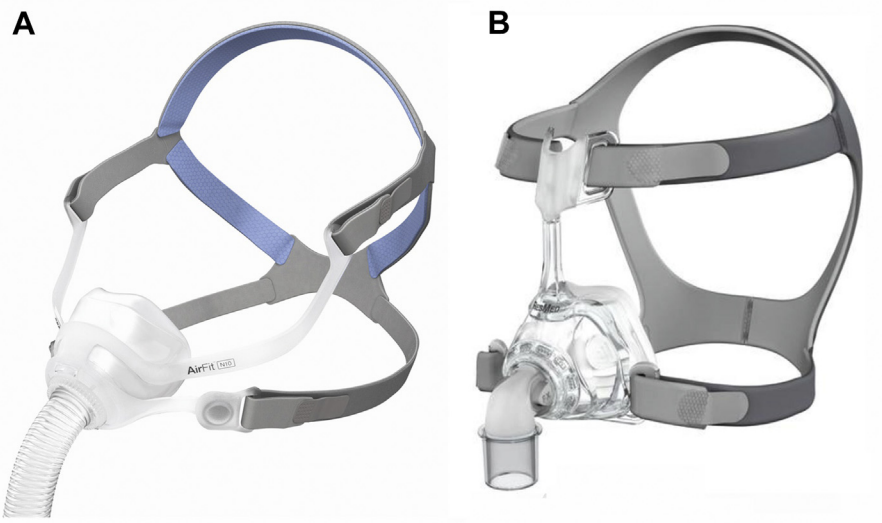

Fig. 1. Nasal masks. (*A*) N-10 and (*B*) Mirage FX by ResMed. (Reproduced with permission from ResMed. ResMed, Air10, Swift, Mirage are trademarks and/or registered trademarks of the ResMed family of companies.)