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Predicting outcome of nasal surgery in patients with obstructive sleep apnoea

To the Editors:

In a recent randomised sham-surgery-controlled trial, KOUTSOURELAKIS *et al.* [1] demonstrated that nasal surgery for fixed nasal obstruction did not improve, or even worsened, sleep-disordered breathing in a majority of 27 patients with obstructive sleep apnoea (OSA) syndrome.

Based on previous studies showing that the oral breathing route predisposes to OSA [2], KOUTSOURELAKIS *et al.* [1] compared the proportion of nasal breathing during sleep in responders and nonresponders to nasal surgery.

This *post hoc* analysis revealed that four responders spent a low proportion of the pre-operative sleep study with nasal breathing, as assessed *via* nasal cannula/pressure transducer and oral thermistor measurements. KOUTSOURELAKIS *et al.* [1] concluded that analysis of the oral–nasal breathing route during sleep might help to identify favourable candidates for nasal surgery among OSA patients with fixed nasal obstruction. As KOUTSOURELAKIS *et al.* [1] pointed out, their technique for assessing impaired nasal breathing during sleep was not ideal since it could not quantify nasal ventilation, and conventional rhinomanometry was also unhelpful in predicting the success of nasal surgery.

It has previously been shown that nasal resistance (and nasal airflow) is highly variable over time, with changes in body position and during sleep [3]. The cyclical changes in side-predominance of nasal airflow over time (the nasal cycles) additionally contribute to the high variability of nasal resistance, particularly in the presence of anatomical obstacles. It is, therefore, unsurprising that the outcome of nasal surgery cannot be reliably predicted from measurement of nasal resistance by rhinomanometry during wakefulness [4] or from qualitative oral–nasal flow recordings. An unobtrusive technique based on a bilateral nasal cannula/pressure transducer system that permits side-selective quantitative measurements of nasal airflow and conductance over the course of a night has recently been developed and validated [3, 5].

We suggest that future studies on the effects of nasal surgery or pharmacological treatment on sleep-disordered breathing

should include continuous quantitative nocturnal nasal conductance measurements for the accurate assessment of a subject's nasal patency as a means of identifying potential responders to treatment.

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STATEMENT OF INTEREST

None declared.

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From the authors:

We would like to thank M. Kohler and K.E. Bloch for their interest and comments about our recent paper [1] and we appreciate the opportunity to make some remarks in reply to their letter.

Indeed, we have acknowledged that the unobtrusive instrumentation used in our study (nasal cannula/pressure transducer and oral thermistor) could not quantify ventilation [2]. Nonetheless, it is considered ideal for a qualitative characterisation of sleep epochs according to the predominant signal in either the nasal or the oral channel [3, 4]. Undoubtedly, the “gold standard” for quantitative monitoring of nasal or oral ventilation is a cumbersome dual compartment face mask with attached pneumotachographs [5]. Additionally, the technique described by KOHLER *et al.* [6] that quantifies overnight nasal airflow and computes side-selective nasal resistance, albeit less obtrusive than the later, still requires similar instrumentation and a rather complex calibration procedure.

We have demonstrated that nasal surgery outcome could be predicted with high sensitivity and specificity by the qualitative nasal-oral flow recordings, whereas nasal resistance measured at the beginning of the sleep study did not have any predictive value. As KOHLER *et al.* [6] demonstrated, a single measurement does not properly reflect the highly variable values of nasal resistance during an entire night sleep. This point might be crucial for interpreting the findings of our study. Indeed, patients with fixed nasal obstruction who present predominant nasal breathing epochs during sleep may be those patients whose overnight nasal patency improves. These patients would represent the nonresponders of our study. On the contrary, patients with fixed nasal obstruction who present predominant oral or oronasal breathing epochs during sleep may be those patients whose overnight nasal patency remains unchanged or even worsens. These patients would represent the responders of our study because nasal surgery could succeed in normalising overnight nasal resistance. Nevertheless, this interesting link between the overnight variations of nasal resistance and the response to nasal surgery remains to be confirmed by future studies.

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STATEMENT OF INTEREST

None declared.

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