The influence of orthognathic surgery on upper airway function is still unknown

To the Editor:

We read the article by Jakobsone et al.¹ with keen interest, because the influence of class III orthognathic surgery on the upper airway is one of main research topics of our surgical team. We understood that the aim of their article was to compare computerized tomography (CT) and cephalographic measurements of the upper airway in conjunction with orthognathic surgery, and we do not dispute their data. However, there are, in our opinion, a few points that must be explained and should be clarified.

We very strongly disagree with the authors’ statement that “the risk of development of obstructive sleep apnea [OSA] after bimaxillary correction of class III malocclusion should be considered to be low, because no constriction was observed at any level of the upper airway.”

Obstructive sleep apnea is a functional disorder rather than an anatomic anomaly. It occurs mainly in the fifth and sixth decades, and patients from this study were young (17.4–24.9 years). How the upper airways change with increasing age is incompletely understood. In general, there is a lack of data about the pattern of the upper airways in young ages and in the elderly. Therefore, the influence of even a small anatomic change in young ages on breathing in older ages is not known.

The main predictive factor for OSA development is the body mass index (BMI). In the study by Jakobsone et al.,¹ data about the BMI before and after surgery were lacking. If these data were to be provided, they may suggest that measurements could not be correct owing to weight changes between the 2 measurements.

Orthognathic surgery is a quite radical change in the upper airways, and all measurements were done in conscious patients. However, we should consider the possibility of muscle adaptation on the new situation by increased muscle tonus. If a patient is sleeping, the situation may change. Only functional examination by polysomnography or a limited sleep study provides sufficient information about the influence of orthognathic surgery on the upper airways, as we previously showed.²,³ The results of our functional limited sleep study showed, contrary to the article by Jakobsone et al.,¹ that there is deterioration in the function of the upper airways after bimaxillary orthognathic surgery for class III deformities.

We think that using medical CT for evaluation of the upper airways is at least questionable from the patient’s perspective, because cone-beam CT provides the same amount of information with a significantly smaller radiation dose.

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In reply:

We appreciate the comments by Drs. Foltán and Šedý expressed in their letter. Most of the issues discussed in the letter are beyond the scope of our study; nevertheless, we would like to make some comments on the sample and conclusions of our study. The study sample was composed of healthy young individuals with normal weight, whose main concern was esthetics. Class III malocclusion is a socially handicapping condition, and we tend to perform surgery for the patients soon after growth has ceased. In our treatment protocol, polysomnography is not included as a routine examination neither before nor after surgery; however, it can be performed according to indications, because we have a sleep laboratory in our institution. In our study, we did not find a decrease of the upper airways at any of the levels. In another sample based on a database of
lateral cephalograms of 76 patients, mean age 24.3 ± 7.3 years (range 15.7-49.2 years), who underwent bimaxillary surgery for class III correction, no reduction of the upper airways was observed provided that the maxilla was moved forward and/or upward.1

By demonstrating our findings we had no intention to diminish the importance of other factors involved in development of obstructive sleep apnea (OSA). The citation Drs. Foltán and Šedý refer to was taken outside of the context. The next sentence in the article is: “However, for an individual, change of weight and other cofactors for developing OSA in the future cannot be predicted.”2 We did not include the body mass index as a variable in our study, because we did not expect significant changes of weight within one-half of a year.

We disagree with Drs. Foltán and Šedý that OSA is not associated with the cranial anatomy and occurs only in the fifth and sixth decades. A recent survey revealed >1,000 cases of OSA patients <18 years in just 1 state in the USA. And the condition was strongly correlated with craniofacial anomaly.3 Several studies have confirmed association between the craniocalial morphology and OSA. After careful and particular diagnosis, OSA can be treated by maxillomandibular advancement.7,9

We agree with Drs. Foltán and Šedý that cone-beam computerized tomography (CBCT) should be a method of choice for evaluation of the upper airways, considering the lower cost, reduced radiation for a patient, and the remarkable development in the airway segmentation techniques for CBCT.10 But we would not agree that CBCT provides the same information about the upper airways as medical CT, because the CBCT image is acquired with the patient in an upright position. The influence of posture on the upper airways was discussed in the article.

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**Free flap reconstruction of the maxilla: Is there something missing?**

**To the Editor:**

We read with interest the article entitled “Maxillary reconstruction using microvascular free flaps” by Mücke et al.1 in this journal. The authors are to be congratulated on adding a study on microvascular reconstruction to the oral-maxillofacial surgery (OMS) literature. Although this article provides useful information, some aspects deserve more discussion and can be listed as follows:

1. The authors enrolled a sample of patients treated until December 2009 and submitted their article in January 2010. The follow-up length and the number of dental implant patients with short follow-up are not known. The unknown and short follow-up period cast doubt on the long-term success in 39 (47%) patients in this series who received dental implant treatment. Outcome research on dental implant therapy should have a follow-up of at least 1 year.2

2. It is generally accepted that outcome measures of maxillary reconstruction include local recurrence and distance metastasis of primary diseases (in case of oncology patients), facial appearance, eyeball position, oral intake and continence, speech intelligibility, nasal functions (e.g., evaluated by nasal endoscopy, biopsy of nasal mucosa, rhinometry), and social activities (normal/diminished).3-5 Although 76 (91.6%) of 83 patients in Mücke et al.’s1 series suffered from malignant tumors, recurrence and metastasis of the diseases were not mentioned. All other measures were also underemphasized.

3. One important concern for microsurgical research is about factors relating to flap failure. Various factors increase complications of free tissue transfer.