

FIGURE 1 Concealment of faucial pillars and uvula by base of tongue.

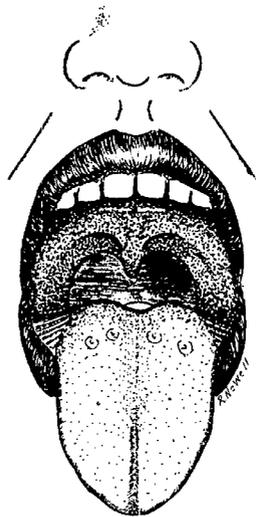


FIGURE 2 Normal visibility of faucial pillars and uvula.

accessibility of larynx; the more acute the angle the poorer the accessibility. If the tongue, the base in particular, is disproportionately large, it overshadows the larynx and renders the angle to the

larynx more acute. A large tongue is also likely to mask the visibility of the faucial pillars and the posterior part of the soft palate where the uvula is an easily recognizable landmark. Since it is not possible to determine the volume or size of the base of tongue relative to the capacity of the oropharyngeal cavity, it is also logical to infer that the base of the tongue is disproportionately large when it is able to mask the visibility of the faucial pillars and uvula. I suggest that such an anatomical relation is a predictor of difficult orotracheal intubation. It is easy to elicit the concealment or visibility of the faucial pillars and uvula by asking the seated patient to open the mouth widely and protrude the tongue fully. Elicitation of this sign would be helpful to the clinical anaesthesiologist in predicting the orotracheal intubation difficulty. I am currently undertaking a prospective study to examine the clinical usefulness of this sign in comparison with existing methods. The professional community is also invited to assess the clinical significance of the sign and the hypothesis.

S. Rao Mallampati MD FACA  
Dept. of Anaesthesiology  
Harvard Medical School and  
Brigham and Women's Hospital  
Boston, Massachusetts

## *Sleep apnoea syndrome*

To the Editor:

The review by Chung and Crago of the sleep apnoea syndrome in relation to anaesthesia<sup>1</sup> described several methods of treatment, but uvulopalatopharyngoplasty (UPPP) was not included in the discussion. UPPP consists of making the oropharyngeal air space larger by means of tonsillectomy and surgical removal of redundant mucosal tissue, leaving the muscular layer intact.<sup>2</sup> UPPP is claimed to be somewhat less effective as compared to permanent tracheostomy<sup>2</sup> but is much less mutilating and disturbing to the patient. It should thus be better accepted by all patients, some of whom do not recognize how dangerous their illness might be. Indeed, there are reports of patients who have died

from the sleep apnoea syndrome shortly after they refused a recommended tracheostomy.<sup>3,4</sup>

Surgery has until now been the only effective treatment, but recently an intraoral tongue retaining device (TRD) was introduced.<sup>5</sup> At least for patients with a low or moderate apnoea index, this device seems to be useful. It requires considerable instruction and training, however, and many patients find it so uncomfortable that they abandon its use.

Per Egil Haavik MD  
University of Oslo  
Department of Anaesthesiology  
Ullevål Hospital  
Oslo 1, NORWAY

#### REFERENCES

- 1 Chung F, Crago R. Sleep apnoea syndrome and anaesthesia. *Can Anaesth Soc J* 1982; 29: 439-45.
- 2 Fujita S *et al.* Surgical correction of anatomic abnormalities in obstructive sleep apnea syndrome: uvulopalatopharyngoplasty. *Otolaryngol Head Neck Surg* 1981; 89: 923-34.
- 3 Lugaresi E *et al.* Hypersomnia with periodic apnoea. SP Medical & Scientific Books, New York, 1978.
- 4 Guilleminault C, Dement W. Sleep apnea syndromes and related sleep disorders; in Williams R, Karacan I (eds): Sleep disorders, diagnosis and treatment. John Wiley & Sons Inc., New York 1978 pp 9-28.
- 5 Cartwright RD, Samelson CF. The effects of a non-surgical treatment for obstructive sleep apnea. *JAMA* 1982; 248: 705-9.

## Siemens PCO<sub>2</sub> Gas Analyser

To the Editor:

We recently had the opportunity to assess the Siemens Sirecust 300 System PCO<sub>2</sub> Gas Analyser, when used for the monitoring of end-tidal CO<sub>2</sub> levels during anaesthesia. This instrument was reliable for this purpose, provided that a non-rebreathing anaesthetic or ventilator circuit was used. However, when it was attached to a partial rebreathing circuit, we found that the indicated

levels of CO<sub>2</sub> underestimated the true levels. Communication with the manufacturer provided the explanation which follows:

"The model 300 PCO<sub>2</sub> gas analyser does not contain a dedicated zero reference cell. The zero is reset during each inspiratory phase, assuming this sample contains no carbon dioxide. Therefore, self-calibration is performed during each inspiratory cycle with the implicit assumption that the end-inspiratory PCO<sub>2</sub> level is zero."

When using a partial rebreathing circuit, without CO<sub>2</sub> absorption, the inspired gas may contain CO<sub>2</sub> and the peak level readings will therefore be reduced. We therefore conclude that this particular CO<sub>2</sub> analyser may be unreliable when used in anaesthetic or ventilator circuits in which partial rebreathing may occur. We wish to draw this potential hazard in the use of the Siemens Sirecust 300 System PCO<sub>2</sub> Gas Analyser to the attention of your readers.

G.L. Dunn MB FRCP(C)  
D.H. Morison MB FRCP(C)  
J.C. Ashton RRT(C)  
Department of Anaesthesia  
McMaster University  
Hamilton, Ontario

#### REPLY

Thank you for inviting us to respond to the issue raised by Dr. Dunn and his colleagues.

We find their description of the analyser's function to be accurate and would like to add to it a few comments as to why Siemens chose to go the design route of "automatic zeroing." The Siemens PCO<sub>2</sub> module, through the technique of automatic re-zeroing with each inspiration, offers at moderate cost, a reliable continuous method of long-term measurement of CO<sub>2</sub> with inherent compensation against

- erroneous readings due to transducer drift with temperature change and
- erroneous readings due to "clouding-up" of the measurement chamber from residues left from vapours and patient excretions passing through the system.

When used in either an open or closed respiratory circuit, accurate measurements totally depend upon the inspired breath containing no CO<sub>2</sub>. In the case of the latter circuit, it is recognized by Siemens that special caution has to be observed in this regard.

Accordingly, in the Operating Instruction attention is drawn to the prerequisite's of (a) CO<sub>2</sub>-free inspired air and (b) fresh soda lime for proper CO<sub>2</sub> absorption. Furthermore, it is stressed that attention has to be paid to other vital signs in "case of a non-physiological fall-off of