CORRESPONDENCE

A VENTILATOR FOR CARBON DIOXIDE LASER BRONCHOSCOPY

Sir,—In their article “A ventilator for carbon dioxide laser bronchoscopy”, Drs Paes, Conacher and Snellgrove (1986) quoted us, but erroneously.

We have reported the use of “high frequency jet ventilation”, not that of “high frequency positive pressure ventilation”. This was clearly stated in our articles (Vourc’h et al., 1983a, b). We have used a high feeding pressure and ventilation rates up to 300 b.p.m. Furthermore, our device was inducing air entrainment. Those three features are characteristic of high frequency jet ventilation.

The authors warn against the risk of air trapping when the telescope is inserted to the bronchoscope. Our experimental study (Fischler et al., 1985) shows that there is, indeed, an increase in lung volume, but that it is minimal especially when the I:E ratio is kept low (0.25), as is the case in clinical practice. No case of pneumothorax has been recorded since we have been using HFJV in bronchial surgery.

The bronchoscope described by the authors is the replica of that previously described by us in the British Journal of Anaesthesia (Vourc’h et al., 1980) and in Thorax (Toty et al., 1981) and the authors are using our own words to describe their bronchoscope.

G. VOURC’H
M. FISCHLER
Suresnes, France

REFERENCES


Sir,—Thank you for the opportunity of replying to the letter from Professor Vourc’h and Dr Fischler.

A transcribing error was made during preparation of our manuscript. High frequency positive pressure ventilation should have read high frequency jet ventilation. The text following this reference indicates that we were discussing jet ventilation. We do apologize for the error.

Jet ventilation is not as simple as Professor Vourc’h states in his letter, particularly in the presence of tracheobronchial stenosis. Air entrainment is reduced in the presence of various conditions such as:

(a) high airway resistance and low pulmonary compliance (Jardine, Harrison and Healy, 1975);

(b) obstruction of the operator end of the bronchoscope with the insertion of telescopes, eye pieces and other instruments (Sanders, 1967; Fischler et al., 1985);

(c) the oblique angle of the jet conduit in relation to the bronchoscope of the modified STORZ bronchoscope that is used by Professor Vourc’h’s team;

(d) probable reduced entrainment as a result of the lower velocity in using a 2.5-mm wide tube for the jet.

All these conditions may relate to jet ventilation for laser surgery in the airway.

In their articles (Vourc’h et al., 1983a, b), Professor Vourc’h and his colleagues measured blood-gas tensions before anaesthesia, 10 min after manual jet ventilation and then 10 min after instituting high frequency jet ventilation. Their results show a decrease in PaCO₂ after manual jet ventilation followed by an increase in PaCO₂, in each step after instigating high frequency jet ventilation. As laser procedures (both carbon dioxide and Nd Yag) take considerably longer than 10 min, one must assume that the PaCO₂ would have increased to much higher values as we have experienced in our practice.

In respect of their second point of contention, our article (Paes, Conachers and Snellgrove, 1986) stated “Introduction of the fibrebronchoscope, which carries the laser fibre, to the lumen of the rigid bronchoscope will cause a decrease in entrained volume and a decrease in the elimination of carbon dioxide. In patients with airway tumours, one must be aware of the risk of gas trapping with this technique. Decreasing the inspiratory/expiratory ratio may minimize this problem”. If the correspondents read our article carefully, they would find that they have expressed similar views in their numerous articles.

The description of their bronchoscope varies from one article to another: “a 16-gauge brass tube was therefore welded to the inside of the bronchoscope, opening at the tip” (Vourc’h et al., 1980); “therefore a 16-gauge brass tube was therefore welded to that part of the bronchoscope which is relevant to our internal diameter 10 mm) was modified by welding a 2.5 mm brass tube on the outer side, the opening of the tube lying obliquely 8 cm from the tip of the bronchoscope” (Fischler et al., 1985).

The bronchoscope we use is supplied by Wolf for carbon dioxide laser bronchoscopy. Our description of it is confined to that part of the bronchoscope which is relevant to our ventilation technique. The Wolf CO₂ laser bronchoscope is a modification of their conventional one and differs “by the addition of a narrow conduit 2 mm in diameter extending along...