
VENTILATION REQUIREMENTS DURING CAESAREAN SECTION

Sir,—I was interested to read the paper by Rampton and colleagues [1] on increased ventilation requirements during obstetric general anaesthesia. Their approach is ingenious for establishing the correct fresh gas flow (FGF) by adjusting this for each patient until the desired $P_{\text{E}}CO_2$ is achieved. However, as they observed, this leads to frequently-adjusted flow rates in the short period before delivery. Are they justified in concluding that pre-delivery FGF rates should be higher than the post-delivery FGF?

In a similar study using the ADE system during anaesthesia for Caesarean section [2], we used a constant FGF throughout the study period. We had expected to find a change in $P_{\text{E}}CO_2$, reflecting a change in FGF requirements following delivery, but on reviewing the hard copy trace of the $P_{\text{E}}CO_2$, no evidence of an abrupt or gradual reduction was apparent following delivery. This is not surprising if one considers that the increase in ventilatory requirements in pregnancy can persist for as long as 14 days post-partum. Therefore, it would seem unnecessarily complicated to advocate two different FGF during Caesarean section.

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REFERENCES

Sirs,—Thank you for the opportunity to reply to Dr Duncan's letter. He wonders if we were justified in recommending higher fresh gas flow (FGF) rates before delivery than after delivery. The major importance of the FGF is in regard to the fetal status before delivery. We quoted a post-delivery value (109 ml kg$^{-1}$ min$^{-1}$) as stable $P_{\text{E}}CO_2$, and FGF were always obtained, whereas in the much shorter induction-to-delivery interval we obtained a reasonably stable $P_{\text{E}}CO_2$ of 4 kPa in only 50% of the patients, and thus cannot recommend our pre-delivery FGF (121 ml kg$^{-1}$ min$^{-1}$) with such certainty. We were not suggesting that it would be obligatory to alter the FGF after delivery, as small changes in $P_{\text{E}}CO_2$ are of little importance to the mother after the baby has been delivered.

Maternal hyperventilation may indeed persist for up to 14 days post-partum, but we feel that there may be an immediate reduction in ventilatory requirements after delivery, mainly because of removal of the fetus and placenta, and partly perhaps as a result of a deeper level of anaesthesia. The oxygen consumption of the human fetus at term is estimated to be 8 ml kg$^{-1}$ min$^{-1}$, and placental oxygen consumption varies from 10 ml kg$^{-1}$ min$^{-1}$ to half that of the fetus [1]. Thus the oxygen consumption of an average weight fetus and placenta at term might be in the region of 33-42 ml min$^{-1}$, which is a significant proportion of the average oxygen consumption of mothers at term (250-350 ml min$^{-1}$).

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REFERENCE