to maintain systemic vascular resistance, to decrease pulmonary vascular resistance and to avoid myocardial depression.

While induction with halothane is generally well tolerated by children with TOF, the more rapid induction with sevoflurane in oxygen instead of halothane in oxygen or halothane/nitrous oxide in oxygen would seem to provide a greater margin of safety until the airway can be secured (2). However, the use of halothane has potentially significant physiological benefits in management of children with TOF once the airway is secure.

While myocardial depression is not a goal in the anaesthetic management of TOF, some element of decreased myocardial contractility or negative inotropy may reduce the likelihood of right-to-left shunting by relaxing dynamic infundibular outflow tract obstruction. Halothane appears to be a more potent negative inotrope than does sevoflurane in children and, therefore, may provide greater relaxation of the dynamic obstruction at the level of the infundibulum (3,4).

Another means of reducing outflow tract obstruction is to increase right ventricular volume. This may be accomplished directly via intravenous administration of fluid, or indirectly, by slowing the heart rate, thereby lengthening diastolic filling time and increasing ventricular end-diastolic volume. The fact that sevoflurane appears to maintain a higher heart rate than halothane may also make sevoflurane a less desirable agent in patients with TOF; faster heart rate may reduce ventricular filling time, ventricular end-diastolic volume exacerbating right ventricular outflow tract obstruction (5).

Maintenance of systemic vascular resistance may be the most important factor determining right-to-left shunting in these patients. High systemic vascular resistance promotes pulmonary blood flow, reducing net right-to-left shunting and decreasing cyanosis. Halothane maintains vascular tone better than sevoflurane and thereby provides for a greater maintenance of systemic vascular resistance (6,7). The decrease in vascular tone from volatile anaesthetics is greater in the young and therefore sevoflurane’s effect on vascular smooth muscle [abstract].

In summary, while we have no fundamental problem with the report by Chiu and Wang, we believe it is important to understand that sevoflurane may not be the best choice for anaesthetic maintenance in children with TOF. In fact, based on its pharmacological profile and the physiology of TOF, halothane may be a better selection, particularly in those predisposed to cyanotic spells and in the very young. In caring for patients with TOF, we routinely use sevoflurane for induction and then switch to halothane for maintenance. This strategy not only appears to reduce the frequency and degree of shunting, but also makes treating the episode much faster and easier with phenylephrine, fluid, and deepening of the anaesthetic plane.

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Authors’ reply
Sir—Thank you for the opportunity to reply to the letter from Drs Ririe and O’Brien. We are glad they found our paper interesting. However, we feel that Drs Ririe and O’Brien have misinterpreted our paper. In our case report, we described the use of sevoflurane in two children with Tetralogy of Fallot (TOF) presented for dental extraction. Although sevoflurane may have some advantages over halothane in these children, especially the rapid and smooth induction and the earlier emergence, we never implied that sevoflurane is the best choice for anaesthetic maintenance in children with TOF. We merely concluded that sevoflurane has some advantages over halothane in children with TOF for dental extraction and therefore may be used in these
children. Obviously, further studies would need to be conducted to evaluate and compare its use with halothane in these children. Even then we believe it will still be difficult to conclude that sevoflurane is the best choice in these children and vice versa.

Second, we do agree, in principle, with Ririe and O'Brien that some of the pharmacological profile of halothane may be beneficial in children with TOF. We agree with them that sevoflurane causes more reduction in systemic vascular resistance and that this is not desirable. In our discussion, we cautioned that 'sevoflurane, despite causing lesser decrease in cardiac output, does reduce the systemic vascular resistance and can potentially worsen intracardiac shunt'.

We were interested to hear that sevoflurane appeared to shift the phenylephrine response curve of the systemic vessels to the right compared with halothane. We are not able to comment on this since phenylephrine is not available in our hospital, thus we have no experience in using it.

Finally, we feel that sevoflurane certainly provides better induction and recovery profile in children with TOF undergoing dental extraction. Some, but not all, of its cardiovascular profile may be better than halothane. However, it is obvious that in children with TOF an individualized anaesthetic management plan is essential depending on the age, severity of the lesion, the type of the surgical procedure and the need for postoperative ventilation. The choice of a particular anaesthetic agent based on sound pharmacological and physiological principles is less important than the skilled execution of the anaesthetic plan.

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Erratum

Some hints to make neonatal epidural anaesthesia less difficult

Yamashita M, Osaka Y. Some hints to make neonatal epidural anaesthesia less difficult. Paed Anaesth 2000; 10:114–115.
The correct legends to the figures for the above correspondence are reproduced below:

Figure 1
Identification of the epidural space with microdrip infusion technique. A microdrip intravenous infusion set is connected to the epidural needle in place of a loss-of-resistance syringe. This technique allows us to use both hands to advance the needle, so a precise control of the needle advancement is easily accomplished.

Figure 2
A manoeuvre to advance the catheter beyond the needle tip. (a) Both the epidural catheter and the introducer, which is withdrawn approximately 5 mm from the distal end of the hub, are pinched together by thumb and index finger. (b) Subsequently, both the introducer and the catheter are advanced together.