Editor—We would like to thank Drs Marri and Coventry for their interest and thoughtful comments on our case report. They pointed out two problems associated with our selection of regional anaesthetic technique and the dose of ropivacaine used.

First, we performed combined axillary/interscalene brachial plexus block. We added the interscalene brachial plexus block to completely anaesthetize the upper extremity, as axillary brachial plexus block alone might result in sparing of the radial region of the forearm. As a result, performing two regional blocks facilitated central nervous system toxicity related to ropivacaine overdose. Secondly, minimum effective dose of a local anaesthetic should be used in small increments with a heightened vigilance when performing regional blocks. Although a definite criterion does not exist, we agree with Chazalon and colleagues stating that it is reasonable to accept a maximum ropivacaine dose of 3 mg kg\(^{-1}\) for an upper limb block. Although the dose of ropivacaine used in our case was within the manufacturer’s recommended dose for brachial plexus block in the UK, USA, Japan, and many other countries, the fact that our case resulted in an overdose indicates that the recommended dose should be reconsidered.

Intravascular injection is unlikely to have been an aetiology in our case because the seizure occurred 10 min after the second ropivacaine injection and total ropivacaine concentration 2 min after the seizure onset was only 2.13 mg litre\(^{-1}\). If intravascular injection is associated, seizure might have occurred earlier and the serum ropivacaine concentration would have been higher. Axillary brachial plexus block using peripheral nerve stimulator, ultrasound guidance, or both would have been appropriate for the choice of regional anaesthesia in our case, which would facilitate reduction in the local anaesthetic requirement. Alternatively, we should have switched to general anaesthesia if axillary brachial plexus block did not achieve satisfactory analgesia.

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Urinary catheterization in labour

Editor—The recent article by Wilson and colleagues concludes that mobile epidural analgesia for labour encourages normal bladder function and reduces the risk of catheterization in labour. Urinary retention associated with epidural analgesia is usually a secondary outcome as in this paper, and has been previously been found to be dose-dependent, with increased concentration of local anaesthetic regimes causing a higher incidence of urinary retention.

In view of their reference to mobile epidural techniques, it is unfortunate that this paper does not present information from the original study which may have been relevant to their findings. For example, the incidence of motor block was 20% in low-dose groups and not reported in the traditional group in the original study. In addition, although more than one-third of women in each mobile technique group did actually walk or stand, this mobilization has not been reported with reference to urinary catheterization and bladder function.

Thus, although the authors suggest that mobile epidurals are advantageous, in fact they can only claim that low-dose epidurals improve bladder function compared with traditional doses, as has been previously demonstrated. Moreover, although mobilization during labour...
with epidural analgesia can improve bladder function,\textsuperscript{5} even low-dose epidural analgesia significantly increases post-void residual volumes compared with no epidural analgesia.\textsuperscript{6} In terms of bladder function, the potential advantages of mobilization cannot be confirmed from this study.

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Editor—We thank Dr Weiniger for her interest in our paper;\textsuperscript{1} however, we refute some of the assertions made regarding the conclusions which can be drawn from our findings. Although Thorburn and Moir had previously described that the density of epidural block exerted an influence over bladder function,\textsuperscript{2} their study demonstrated reduced analgesic efficacy with the group receiving the smallest dose of bupivacaine (0.25%). The advantages accrued from ambulatory epidural techniques in our trial did not come at the cost of a reduction in pain relief.\textsuperscript{3} Furthermore, the groups to which women were randomized in the Comparative Obstetric Mobile Epidural Trial (COMET) received distinct epidural techniques rather than a variation in epidural drug dose alone. Indeed, we have pointed out that the impact of combined spinal–epidural (CSE) and low-dose infusion (LDI) on delivery mode was equivalent, despite differences in the mean dose of bupivacaine given with each technique.

In contrast to Thorburn and Moir’s work, centrally administered opioids (fentanyl), which have a potential impact on micturition, were utilized in both the CSE and the LDI arms of our study. Moreover, we examined bladder function during labour and after delivery rather than report post-partum urinary problems alone. In the light of these stark differences between our investigation and the one conducted 27 years ago, the suggestion that we have demonstrated nothing new to inform this research area appears without foundation.

Turning to the issue of ambulation during labour, with epidural analgesia in situ and its potential influence on voiding; the intervention under scrutiny in COMET was randomization to one of the two mobile epidural techniques, relative to a conventional high-dose control. Other trials have sought to examine the effect of ambulation in labour as an intervention itself. No specific encouragement to mobilize was given to those women randomized to ‘Mobile’ groups in the COMET study.

Bladder function was pre-defined as a secondary outcome at the commencement of the COMET study. In accordance with good trial practice, the effect of a randomized intervention on this outcome has been reported. Although Dr Weiniger is correct to observe that a minority of women in each mobile group actually walked in labour, many more retained normal peripheral motor power. Maternal motor function was investigated as a distinct secondary outcome. It would be possible to perform observational analysis of bladder function in women who chose to walk; however, any conclusions drawn from these data would very be weak in comparison with the pre-specified analysis of the randomized intervention we conducted.

Lastly, we are delighted to note that our findings and those of Dr Weiniger’s research group are convergent on at least one matter. Our study demonstrated that mobile epidural analgesia preserves bladder function during labour relative to high-dose techniques. We did not investigate urinary catheterization in women without epidurals. We have not suggested that epidural analgesia, even delivered in low-dose regimen, reduces catheterization rates relative to parturient populations who do not receive neuraxial block. It would seem reasonable to expect that any regional analgesia carries with it a risk of urinary dysfunction relative to non-regional pain relief. The findings of Dr Weiniger’s study\textsuperscript{2} seem broadly in agreement with this premise, since they demonstrated a higher residual bladder volume with patient controlled epidural anaesthesia (PCEA) in comparison with a non-epidural group. However, we would ring a note of caution in the interpretation of these results, since the study was numerically very small (with only 30 women in each group) and non-randomized, thus potentially vulnerable to selection bias.

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