meninges’. Some product literature refers extensively to the EPIC study, but this related only to the use of CHG in vascular access and urethral catheterization.7

However, the evidence of CHG actually causing adhesive arachnoiditis is weak. A review listing all the possible causes included ‘detergents and contaminants’ as one of eight groups of causes8 elicited five strongly worded letters to the Editor, but none referred specifically to CHG as a cause. In the 12 month period of our audit, we received 26 reports (not all meeting audit criteria) of infective complications, but only one report of adhesive arachnoiditis (for which we could only speculate about the aetiology): of note where the specific antiseptic used was specified, it was CHG in all cases. In the medico-legal case referred to by Scott and colleagues, no evidence was presented that CHG contamination was responsible for the arachnoiditis: the diagnosis was, rather, one of exclusion. In the words of Sherlock Holmes ‘When you have eliminated the impossible, whatever remains, however improbable, must be the truth’. On this occasion, that conclusion may have been wrong.

An effective antiseptic is only one of the required elements of a good aseptic technique. It is recognized that anything which kills bacteria is potentially harmful to nerves, so the user must be meticulous in taking measures to prevent CHG from reaching the CSF. CHG solution (and any alternative for that matter) must be kept well away from the drugs and equipment to be used, and the solution must be allowed to dry first. The use of a concentration of CHG >0.5% cannot be supported; this concentration is evidently effective, but a greater one might increase the risk of neurotoxicity from inadvertent contamination, and should be avoided. Whichever antiseptic agent is chosen, it should be used in a manner that minimizes the risk of it entering the neuraxis.

It is our opinion (a poor level of evidence!) that, on the limited evidence available to us, chlorhexidine 0.5% in alcohol 70% is the optimal skin preparation for neuraxial procedures. It is an ‘off label’ indication. In the absence of guidance from central authorities, clinicians must judge how best to balance the very rare risk of neurotoxicity against the more likely, although still rare, hazard of vertebral canal sepsis. Departments may choose to formally identify CHG for discretionary off-label use and then audit the occurrence of any problems.

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Management of hypotension in obstetric spinal anaesthesia

Editor—The recent editorial by Sharwood-Smith and Drummond1 provides important insights into the mechanism of hypotension during spinal anaesthesia in pregnant women. The authors highlighted that strategies aimed at mitigating the effects of aortocaval compression are relatively ineffective for preventing hypotension and, using evidence gleaned from studies in pre-eclamptic women, emphasized the key importance of the use of sympathomimetic vasopressors to sustain arteriolar tone.

Research from our group supports these conclusions. In several studies, we have demonstrated the efficacy of aggressive use of vasopressors for maintaining maternal arterial pressures during spinal anaesthesia without evidence of detrimental effects on the fetus.2 3 The use of crystalloid prehydration made little extra contribution to haemodynamic stability,4 although the use of colloid was slightly more effective.5 On the basis of the results of these studies, we have largely abandoned the use of i.v. prehydration in our practice.

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However, although current evidence suggested that caval compression is not as important to the mechanism of spinal hypotension in pregnancy as previously thought, as alluded to by Sharwood-Smith and Drummond, it is important to appreciate that hypotension is only one aspect of the haemodynamic effect of spinal anaesthesia. Arterial pressure changes have traditionally been the main target for treatment because they are easy to measure. However, recently, there has been renewed interest in the investigation of changes in cardiac output, largely because of the advent of new non-invasive and minimally invasive measurement techniques. For example, Langesaeter and colleagues recently showed that phenylephrine has the potential to decrease maternal cardiac output, although the exact effects of this on placental blood flow in normal clinical circumstances are uncertain.

Of similar importance, aortocaval compression may have important effects on cardiac output that may not be detected using usual intraoperative monitors. Recently, we used non-invasive haemodynamic monitors to study changes associated with aortocaval compression in non-labouring term parturients. We found that aortocaval compression could cause significant reduction in cardiac output, but this was not necessarily accompanied by hypotension, possibly because of a compensatory increase in sympathetic tone. However, when spinal anaesthesia was induced, patients with greater changes in cardiac output from aortocaval compression had a higher incidence of hypotension and required more vasopressor to maintain their arterial pressure (unpublished data).

Thus, we concur with Sharwood-Smith and Drummond that the use of tilt or other methods to attain lateral uterine displacement remains a rationale part of our management of obstetric patients. Clinicians who rely solely on monitoring of arterial pressure may under-appreciate the effects of aortocaval compression.

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Securing tracheal tubes in facial burns

Editor—Securing the airway is a priority in any injured patient. Patients with facial burns and inhalation injury who require grafting to the face and neck area present additional challenges; facial and airway oedema, significant ventilatory requirements, and the need to avoid the use of securing tape to allow access for facial burn debridement. Techniques to secure an airway in such patients include the use of inter-dental wire fixation, which maintains the tube quite rigidly, minimizing movement, and the use of armoured cuffed oral tracheal tube (COTT).

We present a case of loss of airway when inter-dental wiring was used in association with an armoured tube. A patient with facial burns underwent skin grafting. The COTT was electively changed to an armoured TT, without complication. This COTT was fixed to his incisors via a metal wire, to secure the tube while avoiding damage to his facial skin grafts.

Movement associated with the patient waking did not result in tube displacement but rather resulted in large torsion forces, which were focused at the point of wire fixation. This in turn caused severe distortion of the armoured tube occlusion distal to fixation wires.

Fig 1 Armoured cuffed oral tracheal tube (COTT) showing torsion and tube occlusion distal to fixation wires.