presence or absence of unilateral ventilation. We encourage him to formally investigate this novel technique.

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Prediction of difficult tracheal intubation

Sir,—I was interested to read the paper by Dr D. Savva on prediction of difficult tracheal intubation [1]. What particularly intrigued me was the "sternomental distance" bedside test which was found to be "more sensitive and more specific than other tests".

We have been using the head on neck extension (level of mentum relative to inferior occipital prominence) test for the past 15 yr since publishing a paper on this bedside test [2]. The test is performed with the patient in the sitting position. By placing a finger gently under the chin and a finger at the inferior occipital prominence (IOP), the patient's head is then extended. The relative position of each finger is assessed. If the finger under the chin is higher than the IOP, then this was associated with little difficulty in tracheal intubation and seems to correspond to a sternomental distance > 12.5 cm. However, if the mentum IOP points are at the same level, or if the IOP point is higher than the mentum (on full extension), higher grades of difficulty were experienced and were thus predictable; this was considered a positive sign and would correspond to a sternomental distance of < 12.5 cm.

It seems that the sternomental distance and the mento–IOP level (reference to horizontal) are both assessing the extension at the atlanto–occipital joint using different points of reference. I recommend this simple bedside test (mento–IOP level) as a routine preanaesthetic assessment, particularly in the geriatric patient.

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2. Delilkan AE. Pre-anaesthetic prediction of difficult intubation—a warning sign. *Malaysian Journal of Surgery* 1979; 5: 68–72.

Sir,—Thank you for the opportunity to reply to Professor Delilkan's letter. He describes an interesting alternative to "sternomental distance" as a means of assessing head on neck extension. The mento–IOP level he describes may be another useful bedside test. However, comparison of both tests would be required to assess the relative sensitivity and specificity in predicting difficult intubation.

Sternomental distance is easy to measure, therefore reducing inter-observer variation. Furthermore, the sternomental distance is likely to be short in short-necked patients as well as in those with limited head extension. I recommend this simple bedside test in all adult patients. It can be performed with the patient supine or sitting up.

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Effects of sub-hypnotic doses of propofol on the side effects of intrathecal morphine

Sir,—We read with interest the article by Törn and colleagues [1] and wish to add some comments. The discrepancy observed between the protection offered by sub-hypnotic doses of propofol against either morphine-induced pruritus or nausea/vomiting is not surprising. Propofol has been shown to possess a strong depressant effect on the posterior horn of the spinal cord [2] and activation of non-nociceptive neurones in the posterior horn is the most plausible explanation for spinal-induced pruritus [3]. On the other hand the antiemetic properties of propofol are multifactorial and dose dependent. For instance, experimental work using N1E-115 mouse neuroblastoma cells has shown that propofol interacts with the voltage-gated sodium channel of the receptor [4]. This work has shown that propofol inhibits the 5-HT_3 receptor channel non-competitively in a dose-dependent manner. Clinical studies have demonstrated that the antiemetic effects of propofol are strongest during the early postoperative period [5]. We have shown that in patients suffering nausea and vomiting despite 5-HT_3 antagonist prophylaxis during cancer chemotherapy, the addition of propofol at a rate of 1 mg kg^{-1} h^{-1} significantly decreased the incidence of nausea and vomiting [6]; this protective effect was not present when the dose was lower than 0.5 mg kg^{-1} h^{-1} [unpublished results]. Although these two clinical situations are different, the authors used a continuous infusion of 30 mg day^{-1} (which is equivalent in a normal adult to 0.02–0.03 mg kg^{-1} h^{-1}); this maintenance dose is certainly too low, even if the authors used the same bolus as we showed to be effective in preventing nausea/vomiting secondary to spinal morphine [7].

The mechanisms producing pruritus and nausea/vomiting after spinal morphine are different also and respond differently to propofol. Further studies are required to investigate these effects.

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Aprotinin in knee replacement surgery

Sir,—Thorpe, Murphy and Logan [1] have added to the controversy on the use of aprotinin in joint replacement surgery. Their study was terminated because of the development of arterial thrombosis in a patient who had received aprotinin during replacement knee arthroplasty under arterial tourniquet, and subsequently required amputation. The involvement of aprotinin in this complication is uncertain. Thorpe, Murphy and Logan referred to studies of hip replacement arthroplasty in which aprotinin was used. In one study [2] no increase in venous thrombosis was claimed, while another [3] claimed a decrease.

Before these data may be used in evidence, it is necessary to specify the anaesthetic technique and perioperative use of anticoagulants. Much evidence exists that these factors have a significant effect on bleeding and cardiovascular events during the perioperative period [4]. In one study [3], general anaesthesia (sufentanil–thiopentone–pancuronium–gas–oxygen–halothane sequence) was used. Low molecular weight heparin was given before and after operation, increasing in dose on the fourth day after surgery. In another study [2], (revision hip surgery) there

was no mention of the anaesthetic technique. The patients were given perioperative warfarin.

The results of the Perioperative Ischemia Randomized Anesthesia Trial Study Group are available [5, 6]. Although this trial studied the incidence of arterial thrombosis after lower limb vascular grafting, the general conclusions are most likely to be relevant to orthopaedic surgery. The group showed that patients undergoing surgery under general anaesthesia (fentanyl–thiopentone–pancuronium–gas–oxygen–enflurane) and receiving postoperative patient-controlled analgesia with morphine, had a higher rate of arterial occlusive complications than those receiving extradural anaesthesia (bupivicaine with postoperative extradural fentanyl infusion). Both groups received i.v. crystalloids during, and low molecular weight dextran after, operation. Eleven patients who received general anaesthesia required regrafting or embolectomy (22%) ($n = 51$), compared with two in the extradural group (4%) ($n = 49$) ($P = 0.009$). The changes in serum fibrinogen were similar in the two groups, but the level of plasminogen activator inhibitor 1 (PAI-1) increased in the group receiving general anaesthesia but not extradural anaesthesia. The magnitude of this increase and its postoperative persistence was predictive of arterial thrombosis ($P < 0.05$). PAI-1 is a biological inhibitor of plasminogen activator, the enzyme responsible for the initial activating step of the fibrinolytic cascade. Thus increased activity of PAI-1 is responsible for inhibition of fibrinolysis, altering the balance in favour of thrombosis.

These results add to the body of evidence that the choice of anaesthetic technique influences perioperative fibrinolytic activity, as demonstrated by Modig and colleagues for hip replacement surgery [7].

In the light of these data, all studies of perioperative blood loss or cardiovascular complications should be assessed with full knowledge of both the anaesthetic and surgical techniques before meaningful conclusions or comparisons are drawn.

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Haemodynamic effects of subarachnoid block in the elderly

Sir,—There was an error in the discussion section of this paper by Critchley and colleagues [1]. The authors quoted myself and Dr Bjorn Revenas as stating that 60% of the elderly patients in our study [2] became significantly hypotensive after spinal anaesthesia. What we found was that 27% of patients developed this problem, and that 60% of those with a temperature block level above 17 became hypotensive.

Critchley and colleagues found a much higher incidence of hypotension in non-pretreated patients than we did (68% *vs* 25%), but there were major differences in the populations studied. Unlike the authors, we excluded non-elective, major orthopaedic cases because we thought that their variable state of preoperative resuscitation might make them a separate study population.

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Sir,—Drs Coe and Revanas found in their study that hypotension, defined as a 25% decrease in systolic arterial pressure, occurred in 25% of untreated patients and 60% of patients with a temperature block above T7. We apologise for the incorrect interpretation of their findings in our paper.

The purpose of our study was to describe the haemodynamic effects of untreated spinal anaesthesia in elderly patients. None of our patients received pretreatment to prevent hypotension and 69% became hypotensive. There were two reasons for the increased incidence of hypotension in our study. First, the mean level of spinal block was T6 in our patients using pinprick, and sympathetic block may be assumed to be two dermatomes higher than this. The sensory level produced in Coe and Revanas' study was T7–9. Second, our study included traumatic orthopaedic cases, a group in which 83% of patients required intervention for hypotension. We believe that these patients do indeed constitute a distinct group and are more prone to hypotension after spinal anaesthesia.

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