the epiglottis when used during the second laryngoscopy than the D-Blade [5.5 (4.0, 9.4) vs 6.7 (4.2, 9.1) s, \( P = 0.85 \)]. After the second laryngoscopy, the average time for intubation was shorter for the C-MAC when compared with the D-Blade [9 (5.85, 13.95) vs 7.3 (5.35, 13.45) s, \( P = 0.41 \)]. A cross-comparison was also performed to examine the CL scores and visualization times for all C-MAC procedures in comparison with D-Blade procedures, regardless of the order (Table 1).

Overall, the study had negative results. We did not find statistically significant differences in time to optimal view of the glottis, time of intubation, or number of attempts. Several studies have confirmed that the use of the C-MAC system is safe and provides comparable results, in comparison with direct laryngoscopy, for laryngoscopy and intubation.6\(^6\) 7\(^7\) Although morbid obesity does not constitute a difficult airway per se, it can constitute a serious event in a patient population (mild to severe desaturation). Taking into consideration the limitations of a pilot study, we found that the D-Blade provided a good view of the glottis, which resulted in fast and successful tracheal intubation during routine induction of anaesthesia in severely obese patients, possibly anticipating advanced usage in more serious and difficult situations.

### Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>CMAC (n = 50)</th>
<th>DMAC (n = 50)</th>
<th>( P )-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glottis view for laryngoscopy (1/2a/2b/3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before BURP</td>
<td>37/7/6/0</td>
<td>44/5/1/0</td>
<td>0.11</td>
</tr>
<tr>
<td>After BURP</td>
<td>1/1/4/0</td>
<td>0/2/0/0</td>
<td>N/A</td>
</tr>
<tr>
<td>Time to optimal visualization (s) [median (1st, 3rd quartile)]</td>
<td>6.125 (4.3, 9.2)</td>
<td>6.85 (4.5, 9.7)</td>
<td>0.65</td>
</tr>
<tr>
<td>&gt;1 attempt to intubate (n)</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
</tr>
<tr>
<td>Fog/secretions</td>
<td>6 (12%)</td>
<td>0%</td>
<td>0.01</td>
</tr>
</tbody>
</table>

### Declaration of interest

D.C. has been granted funds from Storz (Germany) to continue research on the C-MAC system. C.A.H. is a paid consultant for Storz (Germany).

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### Portable Diamedica Glostavent: an anaesthetic machine for the itinerant anaesthetist

Editor—The portable Diamedica Glostavent was recently described in this journal\(^1\) after an adaptation for use with sevoflurane. We would like to share our experience using this simple and intuitive machine, and recommend two improvements. This portable ‘suitcase’ anaesthetic machine (Fig. 1) is designed with the developing world in mind.\(^2\)

The machine comprises a draw-over breathing circuit with non-rebreathing valves, a Diamedica vaporizer suitable for halothane or isoflurane, and a breathing circuit with a pressure-relieving valve. This circuit incorporates an expiratory disc, which spins with each exhaled breath, thus...
monitoring respiratory rate without the need for a respiratory reserve bag, during spontaneous ventilation. There is a self-inflating bag for controlled ventilation. The machine is robust with no electronic and few moving parts, thus requires minimal maintenance and disposables. An oxygen concentrator can be added to allow the use of supplemental oxygen if electricity is available.

We visited Hoima Referral Hospital in Uganda with a team from North Hampshire Hospital in Basingstoke, Hampshire, UK. A well-established link with this hospital enables groups of volunteers to visit Hoima three to four times a year and work alongside the medical professionals, providing clinical teaching.

We anaesthetized four patients for Caesarean section using the portable Diamedica Glostavent during our stay. Two of the women were suffering with eclampsia, a third patient had cord prolapse, and the last presented haemorrhaging with grade 4 placenta praevia.

All cases would have been classified as ‘category 1’ Caesarean sections according to the classification system suggested by Lucas and colleagues' widely used in the UK.

We used thiopental and succinylcholine for a rapid sequence induction for all four patients. Positive pressure ventilation was maintained by hand until spontaneous respiration resumed. Anaesthesia was maintained with 2% isoflurane using the draw-over vaporizer. Monitoring comprised a manual sphygmomanometer, a hand-held portable oxygen saturation finger probe, and a stethoscope. End-tidal gas monitoring was not available.

We found that the portable Diamedica Glostavent worked smoothly with and without oxygen, all the patients made a good recovery. The breathing circuits were reliable in both spontaneous and in intermittent positive pressure ventilation modes. In particular, the spinning disc in the centre of the exhaled limb is an ingenious and simple respiratory monitor where there is no end-tidal gas monitoring. Moreover, in unfamiliar surroundings, it was helpful to be able to use a volatile agent that was familiar to us (isoflurane rather than ether) and to deliver it using equipment which, although novel, felt instinctively familiar.

The only problems we encountered were difficulty with filling the vaporizer (a funnel larger than the steel one supplied was require to avoid spilt liquid isoflurane) and the inevitable fragility of using disposable tubing—which would not be robust over the course of prolonged use and carrying lots of disposables defeats the purpose.

We would highly recommend using this equipment in similar circumstances.

Declaration of interest
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Spinal cord stimulator and epidural haematoma

Editor—We present an unusual case of delayed onset epidural haematoma caused by lead migration which developed 72 h after a spinal cord stimulator trial, followed by spontaneous resolution.

Mr PC is a 52-yr-old male with hypertension and chronic hepatitis C, who sustained a back injury in 2004. He underwent lumbar decompression and laminectomy for herniated lumbar disc disease. Several years later, he was seen at the University Pain Clinic with diagnoses of chronic pain syndrome, post-laminectomy syndrome, and bilateral lumbosacral radiculitis. His pain management regimen, including oral analgesics and epidural steroid injections, had proven unsuccessful. The decision was made to proceed to trial of a spinal cord stimulator.

Stimulator placement was uneventful, with epidural entry of the leads at the T12 and L1 interspace, using 14 G Tuohy epidural introducer needles, and electrodes (1.87 mm in diameter) covering from T8 to T10 levels bilaterally. For the next 72 h, he reported a >50% relief of his low back pain with improved ambulation. On the third day of the trial, however, the patient noticed the sudden relocation of stimulation to his right flank, with an abrupt onset of 10/10 ‘burning’ lower back pain, radiating down both lateral thighs, and accompanied by inability to lift his knees. Patient exhibited neurological deficits and loss of rectal tone. The trial leads were immediately removed.

A stat spine magnetic resonance imaging (MRI) identified an epidural or subdural fluid collection, surrounding and compressing the thecal sac and spinal cord, extending from C7 to L3 (Fig. 1), which was interpreted as possibly a rapidly developing epidural haematoma.

Preoperative neurosurgical evaluation, conducted within a few hours after MRI, however, revealed a spontaneous improvement of lower extremity sensory and motor function, along with complete restoration of rectal tone, and improved back pain. Surgical decompression was held off. By the following morning, the patient fully regained motor and sensory function with uneventful discharge home on hospital day 5. A follow-up visit 5 days later revealed no residual neurological deficits. Repeat MRI showed complete resolution of the epidural haematoma. Six weeks after the trial, the patient underwent an uncomplicated permanent implantation of a spinal cord stimulator.