difficult intubation, our results are similar (3.2% in the obese group and 1.9% in the super-obese group). Thus, the incidence of difficult intubation varies widely with the definition used. Until a standard definition can be accepted, all studies on this controversial issue may give conflicting evidence.

**Declaration of interest**

None declared.

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doi:10.1093/bja/aeu077

### A convenient alternative for monitoring opening pressure during multiple needle redirection

Editor—Triple monitoring (ultrasound, nerve stimulator, and injection pressure) during nerve block has been proposed as the standard to minimize nerve injury.1 Ultrasound improves safety in nerve block, but it is relatively user-dependent and hard to differentiate between intra- or extra-fascicular injection by current resolution. Besides, the expert opinion did not reveal that high-definition ultrasound alone could be the answer for safe paraneural injection in popliteal sciatic nerve block in the future.2 On the contrary, ultrasound guidance seems to encourage multiple injection and small readjustment of needle tip position has been suggested to ensure local anaesthetic spread to all trunks for supraclavicular block.3 The effect of nerve stimulator might also be attenuated by previous local anaesthetic spread nearby. Therefore, once the needle has been redirected, monitoring 'every' opening pressure before local anaesthetic administration is the key to avoid intrafascicular injection, especially during performance of block within the nerve plexus or when the information about needle–nerve contact could not be confirmed. Half-the-air technique helps to keep injection pressure below 15 psi,4 from which we provide an easy, convenient, and

<table>
<thead>
<tr>
<th>Patient characteristics</th>
<th>Total sample (n=147)</th>
<th>Obese group (n=93)</th>
<th>Super-obese group (n=54)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yr)</td>
<td>38.9 (13.0)</td>
<td>37.7 (13.1)</td>
<td>41.0 (12.5)</td>
<td>0.96</td>
</tr>
<tr>
<td>Sex (M/F)</td>
<td>66/81</td>
<td>41/52</td>
<td>25/29</td>
<td>0.80</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>162.5 (9.4)</td>
<td>163.1 (9.3)</td>
<td>161.4 (9.4)</td>
<td>0.74</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>115.5 (22.8)</td>
<td>104.8 (15.2)</td>
<td>134.1 (21.9)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>BMI (kg m(^{-2}))</td>
<td>43.7 (7.4)</td>
<td>39.3 (3.8)</td>
<td>51.2 (5.7)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Incidence of IDS &gt; 5 (%)</td>
<td>19.7</td>
<td>29.3</td>
<td>25.6</td>
<td>0.88</td>
</tr>
<tr>
<td>Incidence of Cormack grades 3 and 4 (%)</td>
<td>19.4</td>
<td>20.4</td>
<td>44.4</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Mean time for intubation (min)</td>
<td>1.39</td>
<td>1.35</td>
<td>1.47</td>
<td>0.19</td>
</tr>
<tr>
<td>Incidence of three or more attempts at intubation (%)</td>
<td>2.7</td>
<td>3.2</td>
<td>1.9</td>
<td>0.51</td>
</tr>
</tbody>
</table>

**Fig 1** (A) Half-the-air technique through the three-way stopcock. Ten millilitres of air are aspirated into the syringe above 10 ml test volume (D5W or normal saline). Before local anaesthetic injection for a new tip location, the air is compressed to 50% of the original volume and observed to see if the level starts to decrease in the test syringe. The volume spread could also be visualized in the ultrasound image. The white arrow denotes the action of compression. (B) Local anaesthetic injection after the opening pressure test. If the needle tip location passes the opening pressure test, counterclockwise rotate the handle by 90° for connecting the local anaesthetic syringe with the patient. Keep the same needle tip location and then start injecting local anaesthetic into the space already hydrolocated by the test volume (D5W or normal saline). T, test syringe; L, local anaesthetic syringe.
inexpensive setting to monitor opening pressure during multiple needle redirection.

The extra-cost includes a three-way stopcock (B. Braun Discofix, Germany), a low-dead space (1.4 ml) extension tube (Innovative Extension Set ETC018, Taiwan), and a 20 ml syringe (BD Plastipak, Spain), which total £0.7 (€0.8/$1.1). The three-way stopcock has one male luer lock and two female luer connectors, one at the side and the other at the end. The extension tube connects the male luer lock to the patient. The test syringe is attached to the side female luer port and is ready to perform the pressure test when the three-way is turned on to the patient and the test syringe is held upright. Before local anaesthetic administration for a new needle tip location, opening pressure is tested simply by half-air at this setting (Fig. 1A). Local anaesthetic can then be injected into the space that has been tested (Fig. 1B). In addition to easy pressure monitoring, it also ensures that the total amount of local anaesthetic can be injected into the target site because the test syringe’s injectate consumed to hydrolocate the needle tip is the test volume (D5W or normal saline) instead of local anaesthetic. After injection of local anaesthetic, the volume of which retained in the dead space of the extension tube could be emptied by the volume in the test syringe.

Declaration of interest
None declared.

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Subperiosteal haematoma after general anaesthesia

Editor—Subperiosteal haematomas (SPH) are the orbital equivalent of an intracranial epidural haematoma and are typically the result of blunt orbital or facial trauma.1 We report the second known case of SPH after general anaesthesia and the first reported case in the anaesthesia literature. The patient, 5’4”, 72 kg, 51-yr-old female with a past medical history of stage IV liver cirrhosis, oesophageal varices, and thrombocytopenia underwent oesophago-gastro-duodenoscopy (OGD) with banding for oesophageal varices under general anaesthesia. It is known that maintaining the administration of short-acting opioids during emergence may safely and effectively suppress coughing during emergence.3 Hence, we chose remifentanil to attenuate these responses. Successful and uneventful intubation was achieved with an i.v. induction using lidocaine 1.5 mg kg⁻¹, propofol 2 mg kg⁻¹, and remifentanil 1 µg kg⁻¹ over 30 s, and suxamethonium chloride 1.5 mg kg⁻¹ to facilitate tracheal intubation. The tracheal tube cuff pressure was maintained at 30 cm H₂O. The initial and continued remifentanil infusion rate throughout the operation was 0.125 µg kg⁻¹ min⁻¹. Maintenance was with nitrous oxide in oxygen (66:33) and sevoflurane adjusted to a total additive minimum alveolar concentration of 1.0. Variceal band ligation was performed with good decompression of varices and no intra-procedure complications. Extubation was performed when the patient opened her eyes and followed simple commands. The extubation was uneventful and without any substantial coughing or bucking.

Approximately 1 h post-procedure, she began complaining of right upper eye lid swelling, right eye pain, and diplopia in left gaze. Ophthalmology consultation revealed that she had two lines of decreased vision in the right eye compared with the left eye, with normally reactive pupils of both eyes and no detection of an afferent pupillary defect. Intra-ocular pressure (IOP) was elevated in the right eye and extra-ocular muscle

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