Successful intubation using retrograde trans-tracheal illumination after laryngoscope light source failure

Editor—We wish to describe a problem and solution that we encountered in a 32-yr-old female patient (ASA I) presenting for a radical vaginal hysterectomy. Anaesthesia was induced using fentanyl 2 mg kg⁻¹, propofol 3 mg kg⁻¹, and rocuronium 0.8 mg kg⁻¹. Before direct laryngoscopy, it was noted that the light source for the laryngoscope was not functioning, even though in the preoperative check, the laryngoscope and light source were in working order. A replacement handle for the laryngoscope was not immediately available, and a blade change did not solve the problem. A flashlight was found in the anaesthesia machine drawer, and was applied to the patient’s anterior neck in the region of the cricothyroid membrane by an assistant.

Laryngoscopy was performed using the laryngoscope without a functioning light source. Visualization of the oropharyngeal structures was limited secondary to a lack of a light source on the blade; however, the anaesthetist was able to obtain a Cormack–Lehane Grade I view, and note that the retrograde transillumination of the glottic structures resulted in excellent anatomic visualization, with the vocal cords ‘glowing red’ (Fig. 1). The tracheal tube was passed through the glottic opening, and intubation was confirmed by auscultation and quantitative end-tidal carbon dioxide capnography. Elapsed time from application of the flashlight to the anterior neck to confirmation of tracheal intubation was estimated to be 45 s. The patient’s SpO₂ remained at 99% throughout the procedure, and she was haemodynamically stable.

Successful airway management relies on the combination of a skilled clinician and properly functioning equipment. Laryngoscopes are instruments with multiple components that require regular maintenance for proper functioning. One component of the laryngoscope that is prone to failure is the light source. When a laryngoscope is used to facilitate tracheal intubation, visualization of the glottis is achieved through a combination of proper positioning of the laryngoscope and illumination of the glottis from a light source at the tip of the laryngoscope blade. The intensity of this illumination varies depending on the type of light source used, and inadequate illumination may hinder proper visualization of the glottic opening. Total failure of the laryngoscopic light source makes visualization of the glottis extremely difficult, if not impossible. When back-up equipment is not available, as can be the case in resource-limited situations, such as medivac transports, or remote or developing medical facilities, an alternate technique must be used if tracheal intubation is required.

Antegrade trans-tracheal illumination of the neck is a well-established intubating technique as exemplified by the Trachlight™ and other lightwand devices. To our knowledge, this is the first time that a retrograde trans-illumination technique has been described in the literature.

We believe that retrograde trans-tracheal illumination of the glottis to facilitate tracheal intubation using a flashlight (an item readily available in almost all parts of the world) may represent a simple, novel, inexpensive, and important rescue technique in times of equipment failure when back-up equipment is not available.

Conflict of interest
None declared.

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Postoperative sore throat and ketamine gargle

Editor—We investigated, in a double-blind randomized control study, the effect of a ketamine gargle to attenuate postoperative sore throat (POST) in 44 adult ASA I or II patients undergoing elective gynaecological procedures. The patients had 30 s gargling with either 20 ml of normal saline (Group C: control, n=22) or ketamine 40 mg in 20 ml normal saline (Group K: ketamine, n=22). Anaesthesia was induced with fentanyl, propofol, and rocuronium, 5–10 min after gargling. Maintenance of anaesthesia was with oxygen–air mixture and sevoflurane. Titrated boluses of morphine were given according to clinical requirements during surgery.

The same anaesthetist performed all intubations and extubations.

During surgery, blood samples were collected at intervals for ketamine and norketamine analysis. At the end of the study period, serum samples from five patients in Group K, randomly selected, were assayed by liquid chromatography and mass spectrometry.

After extubation, POST was assessed at 0 (on arrival at the post-anaesthetic care unit), 2, and 24 h using a four-point grading scale (none, 0; mild, 1; moderate, 2; and severe, 3). POST was significantly reduced in Group K compared with Group C (P<0.05) at 0 and 2 h after surgery but not at 24 h (P=0.498). There was significantly less moderate-to-severe POST in Group K at 0 h.

Ketamine gargle has been reported to attenuate POST for 24 h post-surgery.1 We observed significant reduction in POST at 0 and 2 h post-surgery but not at 24 h.

The reported ketamine level to relieve tourniquet pain after an i.v. bolus was >100 ng ml⁻¹.2 The analgesic effect from oral administration of ketamine was at a lower mean plasma concentration of ketamine 40 ng ml⁻¹, presumably due to the higher norketamine levels (160 ng ml⁻¹).3

In this study, blood samples were obtained during intraoperatively, but POST was assessed post-surgery when ketamine concentrations are likely to be lower. Systemic absorption and the possibility of swallowing the residual solution would contribute to the ketamine in the blood.

The highest average ketamine and norketamine concentrations, 16.16 and 11.43 ng ml⁻¹, respectively (Table 1), were detected during surgery but would have decreased after the surgery. These low levels suggested that it was unlikely that systemic absorption played a major role for the reduction of POST. A topical effect is possible.

We conclude that pre-induction ketamine gargle can attenuate POST in the early postoperative period. Drug levels detected were much lower than reported measurements for analgesia after oral and parenteral administration.

Conflict of interest

None declared.

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Cystic fibrosis patient awaiting lung transplantation ventilated with neurally adjusted ventilatory assist

Editor—We report the case of a 22 yr woman with end-stage cystic fibrosis (CF) awaiting lung transplantation who was successfully ventilated with neurally adjusted ventilatory assist (NAVA) after failure of standard pneumatic triggering pressure support.

The patient presented with infective exacerbations of the airways resulting in severe acute respiratory insufficiency. She required tracheal intubation and sedation because of severe respiratory acidosis and hypoxaemia. On recovery from her septic exacerbation, after 10 days, we proposed lung transplantation as an emergency. In order to avoid a prolonged period of diaphragmatic inactivity we decided to stop sedation.1 At that time, her level of intrinsic positive end-expiratory pressure (iPEEP) was 17 cm H₂O with a thoraco-pulmonary static compliance of 16 ml cm H₂O⁻¹. Initially, we tried pressure support ventilation (PSV) with

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Table 1 Average serum ketamine and norketamine levels from five patients in Group K. *Baseline=just before ketamine gargle

<table>
<thead>
<tr>
<th>Time interval (min)</th>
<th>Average serum ketamine (ng ml⁻¹)</th>
<th>Average serum norketamine (ng ml⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (baseline)*</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12–22</td>
<td>16.16</td>
<td>0</td>
</tr>
<tr>
<td>44–60</td>
<td>13.67</td>
<td>8.17</td>
</tr>
<tr>
<td>82–103</td>
<td>8.64</td>
<td>11.43</td>
</tr>
</tbody>
</table>

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