practice in our institution as we feel it reflects some of the concerns Dr Cook expressed about the current situation in anaesthesia.

At the end of 2003, our institution decided to replace the existing reusable Classic LMA™ (cLMA, Intavent Orthofix, Maidenhead, UK) with a single-use airway. This decision was based on the theoretical risk of cross infection (i.e. transmission of infectious protein deposits) with reusable airway devices\(^2\) and on financial grounds (saving on sterilization costs\(^3\)), and was made by non-clinical hospital managers. The anaesthetic department was permitted a limited period to assess the available single-use laryngeal masks on the market. No local ethics approval was sought, no baseline study of the reusable cLMA was performed for comparison, no randomization or blinding process was undertaken, and only a 2 month period was allotted for each laryngeal mask assessment. The limited time frame and haste of the study led to poor patient numbers within all groups, vastly unequal numbers between groups and skewed inter-group patient characteristic data. The results of the evaluations were informally discussed at a departmental level and a laryngeal mask was selected. The decision was predominantly based on the chosen LMA’s 90% overall ‘excellent’ or ‘good’ rating by users, on a purely subjective scale of ‘poor/fair/good/excellent’, and despite, on a retrospective analysis, it having an estimated 15% failure rate \(\text{vs} \ 0\% \) failure rate for one of the other trialled devices—‘failure’ being quoted as (i) unable to position, (ii) large oropharyngeal leak or (iii) poor ventilation).

After 18 months of use in our clinical practice, we decided to re-evaluate the laryngeal mask following concerns raised regarding its performance both by our own anaesthetists as well as reports in the medical literature. This most recent noncomparative study (and therefore nonrandomized or blinded), has again confirmed an approximate 15% failure rate when using this device within our department (i.e. it had to be replaced with another airway device perioperatively). Because of these results, we are currently evaluating other single-use laryngeal masks.

Our intention in briefly outlining the experience of introducing a single-use airway device in our institution is not to criticize any individual or device in particular; it is to highlight the problems faced when pressed into determining the suitability of such devices with (i) little evidence to base this on, (ii) insufficient time and resources to perform appropriate assessments and (iii) to emphasize the need for a proper analysis of all data obtained from such evaluations (would we have made the same original decision if patient characteristic data had been comparable and failure rates had been formally analysed and presented?). Where new evidence becomes available, there should be scope for a review process and possible reassessment.

The only acceptable method of evaluating a medical device is by a formal randomized controlled trial with ethical approval. By this standard, both our assessments were seriously flawed, but we feel unavoidably so, considering the time constraints; and in the absence of any assessment on our part a device would most likely have been imposed at a managerial level with little or no anaesthetic input.

Currently there is a paucity of peer-reviewed publications relating to these single-use airway devices \(\text{vs} \) a plethora of evidence on the cLMA. Studies performed have been small and often conflicting,\(^4\) leaving the anaesthetist with no solid evidence as to which is superior to another, and whether any are truly comparable with the original cLMA. In view of reports of such devices already being used as ‘rescue airways’ and potentially making their way on to ‘difficult airway’ trolleys in the future, such thorough evaluation is surely now essential and should not be left to individual anaesthetic departments to muddle together their own rushed and seriously flawed assessments. We believe our local experience is far from unique.

P. Flynn*
S. Clarke
V. Mitchell
UCH London, UK
*E-mail: perflynn@hotmail.com

One-lung ventilation in a patient with an organizing empyema and severe idiopathic pulmonary fibrosis

Editor—We present the anaesthetic management for lung decortication of a patient with an organizing empyema and underlying severe idiopathic pulmonary fibrosis.

Patients with pulmonary fibrosis have an increased risk of pneumothorax,\(^1\) resolution of which can be markedly delayed because of the high negative pleural pressures necessary for the expansion of stiff, fibrotic lungs. Consequently prolonged chest-tube drainage in turn predisposes to the development of an organizing empyema which frequently requires thoracotomy and definitive lung decortication, rather than a simpler thoracoscopic procedure as is appropriate for early empyema.\(^2,3\)

Our patient was a 77-yr-old male who had been admitted with a right pyo-pneumothorax complicating a lower lobe broncho-pneumonia. Despite intensive management with
chest drains and Heimlich valves, the lung had never re-expanded fully. (See images from the CT scan before decortication in Fig. 1.) Pulmonary function tests over the preceding 12 months had consistently shown a marked restrictive pattern with severely reduced gas transfer. (FEV1 53%, TLC 51% and DLCO 27% of predicted values.) \( P_{\text{aO}_2} \) was 7.2 kPa and \( P_{\text{aCO}_2} \) 7.4 kPa, breathing air.

During surgery, lung separation was achieved with a left-sided 39FG Sher-i-bronch double-lumen tube (Sheridan, Hudson Respiratory Care Inc., Temulca, CA, USA) and its correct position confirmed with fibreoptic bronchoscopy. When one-lung ventilation was initiated, hand-ventilation was used initially in order to assess a considered optimal pattern for mechanical ventilation. This translated to a ventilatory frequency of 14 bpm, a tidal volume of 550 ml and an inspiratory pause of 40% of the inspiratory phase. With the ventilator set to produce these outcomes, the peak airway pressure during one-lung ventilation was 37 cm H2O and the plateau pressure 26 cm H2O.

The high inflation pressures might well have resulted in an increased fraction of the pulmonary blood flow passing to the non-dependent, non-ventilated lung, and an oxygen source at ambient pressure was therefore connected to the lung to allow ongoing apnoeic oxygenation during its collapse. The oxygen source was in the form of a 3 litre reservoir bag approximately three-quarter filled with oxygen, which was connected to the airway of the non-ventilated lung at the time one-lung ventilation was initiated. With the onset of one-lung ventilation, and before the chest was opened, the reservoir bag distended and returned to its pre-distension volume with each cycle of positive pressure ventilation of the dependent lung. After the chest was opened, the bag movement did not cease but continued, albeit to a less pronounced degree, for the whole of the approximately 1 h period of one-lung ventilation. Over this same period, the oxygen reservoir also progressively reduced in size. Most likely, the thick empyema membrane that encased the visceral pleura served to hold the lung partially expanded to the extent that at least some of its airways remained open, so enabling ongoing apnoeic oxygenation. This may well have played an important part in maintaining the \( S_{\text{pO}_2} \) at 99–100%, for the 1 h duration of one-lung ventilation in this extremely compromised patient.

The early postoperative course was uneventful and the decorticated lung was well expanded initially, but it partially re-collapsed on the second postoperative day. Since then, the lung never re-expanded fully, and ongoing management has required a permanent pig-tail chest drain and attached Heimlich valve. A CT scan at follow-up 5 months after surgery showed the persisting right pleural effusion to occupy 50% of the hemithorax, although the lung itself was more uniformly and better expanded than before the decortication. No further surgery is planned.

The authors believe that during one-lung ventilation in the presence of empyema, and especially where there is also generalized lung pathology (such as pulmonary fibrosis and high ventilating pressures), it is rational to attach an oxygen source to the non-ventilated lung for the purpose of enabling possible ongoing apnoeic oxygenation.

J. Pfitzner*
H. J. Stevens
V. Rao
J. S. Close
D. G. Lance
Adelaide, South Australia

*E-mail: pfitznerwines@ozemail.com.au

Fig 1 CT scan showing pulmonary fibrosis and organizing empyema. (a) At the level of aortic arch; (b) at the level of carina; (c) at the level of left ventricle, and showing extensive fibrotic changes and honeycombing effect in both lower lobes. Pig-tailed drain also shown.
5 Pfitzner J, Pfitzner L. The theoretical basis for using apnoeic oxygenation via the non-ventilated lung during one-lung ventilation to delay the onset of arterial hypoxaemia. Anaesth Intensive Care 2005; 33: 794–800
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Death related to a recreational abuse of propofol at therapeutic dose range

Editor—We report the case of a 27-yr-old male anaesthetic nurse found dead at home after self administration of propofol, for recreational purpose. He had several puncture wounds suggesting a chronic abuse during the preceding days. Three empty ampoules of propofol of 20 ml (10 mg ml⁻¹) were discovered beside him and unused ampoules were found in his car.

Toxicological analysis detected propofol in blood, bile and urine by gas chromatography/mass spectrometry. These propofol concentrations were within therapeutic range [blood (0.026 μg ml⁻¹) and bile (0.25 μg ml⁻¹)]. Lidocaine was identified in the blood at a subtherapeutic concentration (1.5 μg ml⁻¹) by liquid chromatography/diode array detection. A lidocaine spray found beside him may have been used to avoid pain during the placement of the intubation tube. No other substances were detected.

Forensic investigation found acute pulmonary oedema and haemorrhagic pancreatitis, two rare propofol-induced adverse drug reactions.¹ ² It is well known that propofol administration, even at therapeutic dose, can cause respiratory depression.² In this case, death could have occurred as result of a pulmonary oedema as he did not receive ventilatory or medical assistance.

Euphoria, sexual hallucinations and disinhibition have been described on recovery of propofol anaesthesia.¹ ² These effects could explain the recreational use of the drug. Moreover, several experimental studies strongly suggest the potential for abuse and dependence on propofol,³–⁵ and few cases of abuse and dependency have been described, mostly in medical professionals. As propofol is generally not recognized as a substance of abuse, and because of its safe profile, it is important to remember that rare adverse reactions of propofol could produce death in a context of abuse, even at therapeutic dose range, in the absence of ventilatory and medical assistance.

A. Roussin* M. Mirepoix G. Lassabe V. Dumestre-Toulet V. Gardette J.-L. Montastruc M. Lapeyre-Mestre Toulouse, France
*E-mail: roussin@cict.fr
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