

induction agents for out-of-theatre intubations was compared against historical controls.

Methods Data were collected prospectively on all out-of-theatre tracheal intubations occurring within the region during a 1-month period. We included all intubations performed outside areas normally used for elective or emergency surgery. Neonates and cardiac arrests were excluded from analysis. Data were collected locally using a standardised proforma and centrally collated. All intubations were performed according to the preference of the treating team.

Results Hypnotics were used for 164 out-of-theatre intubations. Seventy-six per cent of intubations were accomplished by the use of propofol. Propofol was more likely to cause hypotension than other hypnotics (27.4% vs. 14.3%). Use of alternatives increased with seniority of the intubator. Consultants and senior trainees were less likely to use propofol than junior trainees (73% vs. 93%). Etomidate was not used at all. Previous studies from North American and European centres demonstrate greater use of alternative induction agents, particularly etomidate and ketamine [1-4]. UK practice has also changed over time, comparing our study with historical controls [5,6].

Conclusions There is significant geographical variation in choice of induction agent for critically ill patients. There has been an increase in the use of propofol amongst UK physicians over the past 7 years. Choice of hypnotic agent has a significant impact on physiological stability and out-of-theatre intubations are commonly performed in emergent circumstances on unstable patients. This study raises concerns that UK physicians choose induction agents based on familiarity rather than the pharmacodynamic profile.

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Frequency and significance of post-intubation hypotension during emergency airway management

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Introduction Arterial hypotension is known to follow emergency intubation but the significance of this event is poorly described. We aimed to measure the incidence of post-intubation hypotension (PIH) following emergency intubation and determine its association with in-hospital mortality.

Methods A retrospective cohort study of endotracheal intubations performed in a large, urban emergency department over a 1-year period. Patients were included if they were >17 years old and had systolic blood pressure (SBP) >90 mmHg for 30 consecutive minutes prior to intubation. Patients were analyzed in two groups: those with PIH defined by SBP <90 mmHg within 60 minutes of intubation, and those with no PIH. The primary outcome was hospital mortality.

Results Emergency intubation was performed on 465 patients, of which 336 met inclusion criteria and were analyzed. The median patient age was 49 years, 59% of patients presented with nontraumatic illness and 92% underwent induction with etomidate. PIH occurred in 76/336 (23%) of patients. The median time to first PIH was 11 minutes (IQR 2 to 27). Intubation for acute respiratory failure was the only independent predictor of PIH (OR = 2.1, 95% CI = 1.1 to 4.0). Patients with PIH had significantly higher in-hospital mortality (33% vs. 21%; 95% CI for 12% difference = 1 to 23%) and longer mean ICU length of stay (9.7 vs. 5.9 days, $P < 0.01$) and hospital length of stay (17.0 vs. 11.4 days, $P < 0.01$). Multivariate logistic regression analysis confirmed PIH as an independent predictor of hospital mortality (OR = 1.9, 95% CI = 1.1 to 3.6).

Conclusions PIH occurs in nearly one-quarter of normotensive patients undergoing emergency intubation. Intubation for acute respiratory failure is an independent predictor of PIH. PIH is associated with a significantly higher in-hospital mortality and longer ICU and hospital lengths of stay.

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Clinical experiences with a new endobronchial blocking device: the EZ-Blocker

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Introduction Both elective and emergency thoracic surgical procedures may require one-lung ventilation (OLV) for lung isolation [1]. Although in the majority of the cases a double lumen endotracheal tube (DLT) is the first choice, there are situations when insertion of DLT is not feasible [2]. We therefore intended to test the applicability of a recently developed endobronchial blocker (BB), the EZ-Blocker, in clinical practice.

Methods Data were obtained from 10 patients undergoing thoracic surgery necessitating OLV. For lung isolation, a single lumen tube (SLT) and EZ-Blocker as BB were used. The time of insertion and positioning of BB, the lung deflation time with the BB cuff inflated and deflated, the minimal occlusion volume (MOV) of the BB cuff with 25 cmH₂O positive airway pressure (PAP) and intracuff pressure (ICP) at MOV were registered. Based on the CT scan the diameter of the right (RMB) and left main bronchus (LMB) at 1 cm distal apart from the bifurcation was measured offline. Lung deflation was defined as 5.5 cm distance of the upper lobe from the rib cage at open chest.

Results The insertion time was 76 ± 15 seconds. The lung deflation time through the lumen with the BB cuff inflated was 700 ± 83 seconds, and with a deflated cuff through the lumen of SLT was 9.4 ± 0.7 seconds. The MOV was 6.7 ± 1 ml in LMB versus 8 ± 1 ml in RMB ($P = 0.03$). The ICP was 40 ± 4 mmHg in LMB versus 85 ± 5 mmHg in RMB ($P < 0.001$). With linear regression there were strong positive relationships between the diameter of MB and MOV/ICP.

Conclusions The use of EZ-Blocker is easy and safe for infrequent users, too. The short insertion time and short lung deflation time allows use in an emergency situation or in case of a difficult airway. Only a small fraction of ICP (10 to 20%) is transmitted to the bronchial wall and it does not cause mucosal ischemia. The diameter of the MB has great impact on the MOV and ICP. The MOV is similar but ICP is smaller than published in previous reports with other BBs [3].

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Rohrer's constant, k_r , as a factor for determining endotracheal tube obstruction

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Introduction The purpose of the study was to apply a method by which to measure Rohrer's constant, k_r , in order to estimate endotracheal tube (ETT) resistance (RETT). The resistance drop across the ETT is expressed by the equation $RETT = k_1 + k_2 V'$, as Rohrer described, where k_1 is the constant of laminar flow (V') and k_2 is the constant of turbulent flow. In our past study we graphed RETT over inspiratory V' for ETTs with inner diameters of 6.5 to 9.0 mm [1]. This graph provided us with k_1 and k_2 constant values, for each ETT size.

Methods Ten intubated patients with ETTs with difficulty in patency were included in the study. Patients were all fully sedated and mechanically ventilated, by a Siemens Servo 300 ventilator, under constant flow. Pressure data were obtained: at the proximal end of the ETT ($P_{proximal}$), reflecting the impedance distally to the proximal end of the ETT; and at the distal end of the ETT (P_{distal}), reflecting the resistance distally to the distal end of the ETT. P_{distal} was recorded by an intratracheal catheter, placed 2 cm above the carinal end of the ETT. Each resistance was calculated by dividing $\Delta P (P_{peak} - P_{plateau})$ by V' ; at every point of interest (either proximal or distal sites), using the rapid end-inspiratory occlusion method. RETT resulted from the difference: