

POSTER PRESENTATION

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Reintubation following planned extubation: incidence, mortality and risk factors

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Introduction

Studies indicate reintubation rates following planned extubation to be between 10-20% in the general ICU population. There is evidence that extubation failure and reintubation can worsen outcome, with studies suggesting ICU mortality rates of between 25-50% in these patients.

Objectives

To establish how our failed extubation rate and subsequent mortality compare to previously published studies, whilst assessing the impact of previously proposed risk factors for extubation failure.

Methods

In this retrospective case note study we looked at the outcome of each extubation between 1st October 2013 and 30th September 2014. We included all patients >18 years of age invasively ventilated for >48 hours. We excluded patients proceeding directly to tracheostomy or extubated for withdrawal of care. Failed extubation was defined as the need for reintubation within 5 days of planned extubation. Data was analysed in two groups; 'success' and 'failure' of extubation.

Results

180 patients were initially included in the study, with 105 remaining once exclusion criteria had been applied. There were a total of 141 extubations with a failure rate of 38%. Those in the 'failure' group had a median length of ICU stay of 14.9 days vs. 8.2 days in the 'success' group. The ICU mortality in these groups being 10% vs 8% respectively.

In relation to risk factors for extubation failure, there were no clinically significant differences between the 'failure' and 'success' groups in terms of: age (58 vs 57 yrs);

duration of IPPV (3.3 vs 4 days); fluid balance (+ve 2047 vs 2386 mls.); RSBI (50 vs 36) and APACHE II scores (15 vs 17) respectively. However, 90% of patients with a RSBI >100 immediately prior to extubation did subsequently require reintubation.

Emergency non-invasive ventilation was commenced in 10% of patients post extubation, with 70% subsequently requiring reintubation. The reasons for extubation failure were difficult to determine, but upper airway obstruction was documented as a contributing factor in 19% of failed extubations.

Conclusions

Reintubation post failed extubation is associated with a prolonged ICU stay, but in our patient population had no impact on ICU mortality. Extubation failure is difficult to predict although a RSBI >100 at the time of extubation appears to place patients at particularly high risk. The use of emergency NIV post extubation has a high failure rate and should not delay reintubation when necessary. Upper airway obstruction still appears to be an important cause of extubation failure and we would recommend a 'cuff leak' test prior to extubation.

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