

Conference abstract

Peri-Extubation Predictors of Successful Elective Extubation in Preterm Infants

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INTRODUCTION

Preterm infants frequently require invasive mechanical ventilation for respiratory failure, but prolonged ventilation is associated with significant pulmonary and neurodevelopmental morbidity. Elective extubation failure remains common, and predictors of successful extubation are not well standardized. To compare postnatal and peri-extubation variables between successful and failed elective extubation attempts in preterm infants and to evaluate reintubation rates by post-extubation respiratory support.

METHODS

We conducted a retrospective cohort study of preterm infants (<32 weeks' gestation, <1500 g) mechanically ventilated in a Level IV NICU between July 2021 and July 2023. Infants were categorized into successful or failed extubation groups. Variables including gestational age, weight, pre-extubation FiO₂, capillary blood gas parameters, mean airway pressure, and post-extubation respiratory support were compared.

RESULTS

The final sample consisted of 41 preterm infants who met inclusion criteria, of whom 17 (41%) had successful extubation and 24 (59%) experienced extubation failure. Male infants were more likely to have successful extubation compared with females, though this difference was not statistically significant. Infants in the successful extubation group had a higher gestational age at birth (mean $\pm$ SD: 26.2 $\pm$ 2.3 weeks vs 25.6 $\pm$ 1.4 weeks, $p = 0.44$) and received the DART protocol more frequently (4.6 $\pm$ 5.7 days vs 2.2 $\pm$ 3.7 days, $p = 0.16$); however, these differences did not reach statistical significance. Successful extubation was significantly associated with higher weight at extubation (1226 $\pm$ 376.9 g vs 836 $\pm$ 336 g), higher post-menstrual age at extubation (29.6 $\pm$ 2.1 weeks vs 27.3 $\pm$ 2.2 weeks), and higher pre-extubation pH (7.36 $\pm$ 0.08 vs 7.31 $\pm$ 0.05) (all $p < 0.05$).

CONCLUSIONS

Identifying peri-extubation factors associated with successful extubation may inform clinical decision-making and reduce ventilator-associated morbidity.



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