Multidisciplinary Development of Evidenced-Based Guidelines for Extubation in the Operating Room following Pediatric Cardiac Surgery

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BACKGROUND

Extubation in the operating room (OR) following cardiac surgery has become commonplace in contemporary pediatric cardiac critical care. The benefits of this practice are debatable and must be measured against the risks, especially the risk of re-intubation in the early postoperative recovery period. We aimed to create an evidenced-based protocol to guide the practice of immediate OR extubation without negatively affecting postoperative outcomes.

METHODS

A comprehensive literature review to identify factors associated with re-intubation following extubation in the OR after pediatric cardiac surgery was conducted. Based on the review and consensus of pediatric cardiac critical care providers and pediatric anesthesiologists, a protocol for exclusion criteria for OR extubation was created. Protocol implementation began on 1/1/2015. Data are provided as median (25th, 75th percentiles).

RESULTS

From 2011 to 2014, a median of 203 patients (194, 203) were intubated in the OR for cardiac surgery every 6 months

- 58.4% [median 119 cases (104, 130)] of these patients were extubated in the OR prior to transfer to the ICU;
- 2.9% [median 3 (2.5, 5)] had extubation failure requiring re-intubation

During the first 6 months of 2015, we performed 187 operations of which 45.5% (p<0.001) were extubated in the OR and only 1 patient (1.2%) required re-intubation in the ICU (p=0.31)

- Median time from skin closure to leaving the OR was 25 minutes (18, 35) from 2011-2014 and 25 minutes (20, 32) during the first six months of 2015, (p=0.58)
- Median duration of postoperative mechanical ventilation was zero hours (0, 19.8) from 2011-2014 and 1.6 hours during the first six months of 2015 (0, 25.5), (p=0.004)

CONCLUSIONS

- Evidenced-based exclusion criteria for extubation in the operating room following pediatric cardiac surgery is feasible
- Following institution of our protocol, median duration of intubation increased from only 0 to 1.6 hours, suggesting that many patients not extubated in the OR are extubated shortly after arrival to CVICU
- Our criteria were associated with minimal adverse effects on OR utilization and postoperative outcomes
- Protocols may decrease variations in practice and may prevent avoidable morbidity associated with extubation failure.