

Operating Room Extubation after Cardiac Surgery is Associated with Higher Reintubation and Reoperation due to Bleeding

Objectives: Time-directed extubation (fast-track) protocols are associated with decreased length of stay and total hospitalization costs without differences in peri-operative outcomes. Retrospective studies suggest that operating room (OR) extubation confers a reduction in length of stay and cost without increasing the re-intubation rate. However, evaluation of postoperative outcomes with this practice has been limited. The objective of this study was to compare the outcomes of extubation in the operating room (OR) versus fast-track extubation within 6 hours of leaving the operating room.

Methods: A total of 24,962 patients undergoing STS index cases between 2011 and 2020 who were extubated within 6 hours of surgery end-time were identified from a regional STS quality collaborative. Patients who were intubated before entering the OR, without documentation of intubation and extubation time or missing STS predicted risk of mortality, combined bypass and valve procedures and emergent or emergent-salvage cases were excluded. The resulting cohort was stratified into two groups; extubation in the OR (n = 498) and fast track extubation within 6 hours of leaving the OR (n = 22,464). In order to account for pre-operative differences, immediate extubation cases were propensity score matched (1:n) to fast-track extubation, with exact matching for center. Covariates included in the analysis were selected following assessment of collinearity,

Results: OR extubation cases (n = 487) were well matched to 6 hour extubation (n = 899) with no significant baseline differences (standardized mean difference < 0.10, Figure 1). The rate of re-intubation was higher for patients extubated in the OR [21/487 (4.3%) vs. 16/899 (1.7%), p = 0.008] as well as incidence of re-operation for bleeding [12/487 (2.4%) vs. 8/899 (0.8%), p = 0.03]. There was no significant difference in the rate of operative mortality [4/487 (0.8%) vs 6/899 (0.6%), p = 0.74]. However, OR extubation was associated with shorter total OR time (303 vs. 318 min, p = 0.006 and overall length of stay (5.6 vs 6.2 days, p < 0.001), and lower total cost of admission (\$29,601.79 vs \$31,565.34, p < 0.001).

Conclusions: OR extubation is associated with a higher postoperative risk of reintubation and reoperation due to bleeding, but lower resource utilization. Future research exploring differences in readiness for extubation including attention to meticulous hemostasis and patient-specific pulmonary mechanics may be required prior to widespread adoption of this practice.

Andrew Hawkins (1), Raymond Strobel (1), Hunter Mehaffey (1), Robert Hawkins (2), Andrew Young (1), Leora Yarboro (1), Mohammed Quader (3), Nicholas Teman (1), (1) University of Virginia, Charlottesville, VA, (2) University of Michigan, Ann Arbor, MI, (3) Virginia Commonwealth University, Richmond, VA

Additional Resources

- https://files.aievolution.com/prd/aat2101/abstracts/abs_1428/figure_1_hawkins_operatingroomextubation.pdf