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# Risk factors for prolonged emergence from fast track cardiac anaesthesia

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## Keywords

Coronary artery bypass graft, fast track cardiac anaesthesia, outcome, predictors, risk score

# Comments

This paper is relevant for those involved in cardiac ICU and provides a useful assessment of risk. It is a single centre study and so its applicability to practice elsewhere may be questioned. Of particular note is the fact that 25% of patients were not extubated by 10 h despite that being a primary aim. The risk factors identified were not surprising, and given that other evidence suggests that there is no detrimental effect of this fast track protocol, it is difficult to see how this CRS will alter clinical practice.

# Introduction

Cardiac surgery is one of the most expensive major surgical procedures. Fast track cardiac anaesthesia (FTCA) has emerged as a way of reducing these costs, and has proven to be safe. However, there are no published reports on predictive scores for the success of this strategy as yet.

# Aims

To identify risk factors for delayed extubation, prolonged length of stay in the intensive care unit (ICU LOS), and mortality in patients undergoing FTCA. To develop a simple and useful risk scoring system.

# Methods

Consecutive patients presenting for coronary artery bypass grafting (CABG) were studied at a major Canadian teaching hospital. In brief, the anaesthetic consisted of 10-15 μg/kg of fentanyl, isoflurane prior to bypass, and a propofol infusion after bypass. Analgesia was provided with a morphine infusion.

Patients were assessed for extubation and ICU discharge was according to strict criteria. Outcome variables included delayed extubation (> 10 h), prolonged ICU stay (> 48 h) and mortality within 30 days or in hospital. Data were analysed by univariate analysis and the significant variables were then entered into separate multiple logistic regression models for delayed extubation, prolonged ICU LOS, and mortality to identify independent risk factors. Each risk factor identified in this way was then given a score and used to arrive at cardiac risk scores (CRS) for the primary outcomes. These scores were then validated by bootstrapping techniques.

# Results

In total, 885 patients were studied. Extubation time and ICU LOS showed skewed distribution with ranges of 1-306 h and 1-37 days respectively. Twenty-five perioperative risk factors for prolonged ICU LOS were identified. Univariate analysis detected 10 for mortality and 18 for delayed extubation. From multiple logistic regression analysis, six risk factors for delayed extubation, eight for prolonged ICU LOS and three for mortality were found.

# Discussion

Increased age and female gender were preoperative variables associated with delayed extubation. Intraoperatively, the use of balloon pumps, inotropes, bleeding and atrial arrhythmias were important. The finding that perioperative rather than preoperative variables are predictive of delayed extubation is consistent with those from other studies. With regard to prolonged ICU LOS, three preoperative variables were identified: gender, age and recent myocardial infarction (within one week). Five postoperative variables were important: usage of intraaortic balloon pump, inotropes, excessive bleeding, renal insufficiency and atrial arrhythmia. Lastly, risk factors for mortality were female gender, emergency surgery and poor left ventricular function. The study showed equal predictive ability between the logistic and CRS models for the risk factors for delayed extubation, ICU LOS, and mortality. The study is limited by the fact that single institution data were used and that validation was via bootstrapping rather than externally derived data.

## References

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