

Accepted Manuscript

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PII: S2210-8440(18)30031-5
DOI: 10.1016/j.tacc.2018.04.013
Reference: TACC 419
To appear in: *Trends in Anaesthesia and Critical Care*
Received Date: 19 February 2018
Revised Date: 31 March 2018
Accepted Date: 16 April 2018

Please cite this article as: Manuel Kindler, Patrick Mark Wanner, Miodrag Filipovic, Cardiac risk in non-cardiac surgery: a review, *Trends in Anaesthesia and Critical Care* (2018), doi: 10.1016/j.tacc.2018.04.013

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Cardiac risk in non-cardiac surgery: a review

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Abstract

International guidelines propose a stepwise workup for the assessment/ risk stratification of patients undergoing non-cardiac surgery and guide further testing or treatment/ optimization of underlying cardiovascular disease when appropriate. Despite optimal surgical and medical care, around one million patients worldwide will die annually shortly after having undergone a surgical procedure. A major contributor to this postoperative mortality are “silent myocardial ischemic events” which often go unrecognized. Routine measurement of cardiac biomarkers is an important step in the identification of high risk patients and in improving their perioperative care. Once an ischemic event has occurred, a multidisciplinary approach should guide management (e.g. optimization of anti-ischemic and plaque stabilizing therapy, anticoagulation, antiplatelet therapy or invasive strategies), keeping in mind the fragile balance between risk of ischemic events and bleeding.

Key points

- Troponin elevation is a strong risk factor for 30- day mortality after (non-cardiac) surgery and always represents myocardial injury.
- The vast majority of patients with postoperative troponin elevations have no ischemic symptoms; those with clinical symptoms of cardiac ischemia have even higher 30-day mortality.
- High preoperative natriuretic peptide levels may identify high risk patients who require routine postoperative troponin measurements.
- The perioperative risk of patients with heart failure is underestimated.

Keywords:

Cardiac risk; risk stratification; non-cardiac surgery; troponin; myocardial injury after non-cardiac surgery; perioperative myocardial infarction; heart failure

1. Introduction to factors affecting cardiac risk and the magnitude of its sequelae in non-cardiac surgery

The benefit of surgical interventions for the individual patient is rarely questioned. However, four percent of patients undergoing non-cardiac surgery will die shortly after the procedure,¹ rendering perioperative death the third most common cause of death in the United States.²

The surgical technique itself can modify the risk, potentially favoring endoscopic³ over open and endovascular over open vascular techniques,⁴ respectively. In abdominal aortic aneurysm repair, the prototype of high risk non-cardiac surgery, the endovascular approach is more often chosen for elderly patients, in elective as well

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