

Subject:	IMPLICATIONS OF OBESITY FOR OUTCOMES OF NON-BARIATRIC SURGERY	REL-GOV-032
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## INTRODUCTION

Non-bariatric surgery on the obese patient carries with it complexities and risks. Surgeons need to have awareness of these risks and consider the location of procedure and postoperative care to achieve the best outcomes.

## BACKGROUND

In 2010, 27% of Australia's 22 million population were obese, with the number continuing to rise.<sup>1</sup> The mean BMI has increased over the last 30 years from 24 to 28 kg.m<sup>-2</sup>. Many studies have shown that obesity is associated with lower mortality after non-cardiac and cardiac surgery.<sup>2,3,4</sup> The "obesity paradox" is surprising given the evidence that obesity is associated with decreased life expectancy.<sup>5,6</sup> These inconsistent and controversial results may be due to the existence of two distinct subgroups. One group is "the metabolically healthy but obese," whereas the other group are the "metabolically obese." These are the patients with the metabolic syndrome.<sup>7</sup> The metabolic syndrome is characterized by central obesity, hypertension, impaired glucose tolerance, dyslipidemia, and prothrombotic and proinflammatory states.<sup>7</sup> When grouped together these metabolic abnormalities are associated with an increased risk of cardiovascular disease, diabetes and overall mortality.

A recent meta-analysis demonstrated that the metabolic syndrome is associated with a 35% increase in the risk of all-cause mortality, a 50% increase in the risk of cardiovascular disease, and a 75% increase in the risk of stroke.<sup>8</sup> Patients with the metabolic syndrome also have a 2.6-fold increased risk of chronic kidney disease<sup>9</sup> and are more likely to have impaired lung function.<sup>10</sup>

In a large database review,<sup>11</sup> patients with the modified metabolic syndrome (obesity, hypertension, treated diabetes) undergoing non-cardiac surgery were found to be at increased risk for mortality, cardiac adverse events, pulmonary complications, acute kidney injury, stroke and coma, wound complications, and postoperative sepsis. Increasing levels of obesity in patients with the modified metabolic syndrome was generally associated with worse postoperative outcomes. The magnitude of the increase in risk was dramatic for some complications. In particular, compared with normal-weight patients, patients with the modified metabolic syndrome had a nearly 2- to 3-fold higher risk of cardiac complications, a 1.5- to 2.5-fold higher risk of pulmonary complications, a 2-fold higher risk of coma and stroke, and a nearly 3- to 7-fold higher risk of acute kidney injury. Recent studies have also shown increased operative mortality,<sup>12</sup> stroke, and acute renal failure<sup>13</sup> in patients with the metabolic syndrome undergoing coronary artery bypass grafting.

## IMPLICATIONS FOR SURGEONS

Surgeons need to have an awareness of the increased risks in performing non-bariatric surgery in obese patients especially those with the additional features of metabolic syndrome. This should include an awareness of the organ systems particularly at risk and the employment of strategies to attempt to reduce the risks. These strategies will commonly involve the anaesthetist and relevant physicians in the preoperative and postoperative phases, as well as equipment and facility factors.

### Timing of the surgery

- In the setting of emergency surgery, involvement of anaesthetists and physicians early in the management may be prudent. In those patients requiring elective surgery, serious consideration should be given to the patient achieving weight loss prior to embarking upon the surgery especially if they have features of the metabolic syndrome. Very low calorie diets have been employed to assist with preoperative weight loss.

### Preoperative assessment

- Height and weight should be measured and BMI calculated. Elective anaesthetic assessment, involvement of physicians for poor diabetic control and assessment of cardiac and respiratory status should be regarded as routine practice in this group of patients.

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### Location of procedure

- Facilities should be able to provide appropriate bariatric equipment i.e. beds, chairs, hoists etc. Consideration should be given for patients with a BMI > 40 kg.m<sup>-2</sup> to be reviewed by an experienced day surgery anaesthetist prior to acceptance for day surgery procedures. Adequate monitoring of inpatients with on site staff available to identify early, and deal with, postoperative complications should be regarded as a minimum. If this is not available in the surgeon's usual facility, then consideration must be given to selecting an alternate facility.

### Postoperative care

- Patients on CPAP preoperatively must bring their machine into hospital and continue to use it postoperatively. If the patient is undergoing elective surgery and gives a history of snoring or daytime somnolence, consideration should be given to referring the patient for a sleep study and treating sleep apnoea preoperatively. The surgeon must remain vigilant in observing the emergence of cardiorespiratory, renal or neurological complications postoperatively. Early recognition and intervention is essential for the best outcomes and if this cannot be provided within the facility then consideration should be given to arranging transfer to a higher acuity facility. Analgesia and thromboprophylaxis should be dosed appropriately and analgesia guidance from the anaesthetist may be required.

Surgery can be performed safely in this compromised group with a multi-disciplinary approach.

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