

# Quantifying a care gap in BC: Caring for surgical patients with a body mass index higher than 30

Surgeons responding to a survey acknowledge that they have delayed or declined to perform surgery in obese patients because of concerns about technical and anesthetic challenges.

## ABSTRACT

**Background:** Obesity rates are on the rise in British Columbia, in Canada, and throughout the world. Because obesity is associated with many well-documented comorbidities and perioperative complications, surgical and anesthetic management of obese patients is challenging and resource-intensive. An obesity guideline from the College of Physicians and Surgeons of British Columbia considers the suitability of patients for surgery at nonhospital medical facilities in terms of three body mass index (kg/m<sup>2</sup>) categories. Patients with a BMI of 30 to 34.9 are considered suitable surgical candidates only if they have no more than two comorbid conditions; patients with a BMI of 35 to 38 should have only minor peripheral procedures with regional or local anesthesia; and patients with a BMI higher than

38.1 should have surgery only “under extraordinary situations.” These recommendations mean that some obese patients may not have access to the surgical care they require—a potential care gap that we set out to quantify by surveying BC surgeons and anesthesiologists.

**Methods:** A questionnaire was developed to find out about the surgical care of obese patients based on three risk stratification categories: BMI 30 to 34, 35 to 37, and 38 or higher. The questionnaire was distributed via e-mail invitation to BC associations representing general surgeons, orthopaedic surgeons, obstetrician/gynecologists, and anesthesiologists. SurveyMonkey was used to collect and analyze the responses.

**Results:** A total of 377 respondents completed the survey: 154 surgeons (53 general surgeons, 57 orthopaedic surgeons, and 44 obstetrician/gynecologists) and 223 anesthesiologists. All six health authorities in British Columbia were well represented. All surgeons and almost all anesthesiologists (97%) indicated that they provide care for obese patients. Anesthesiologists indicated that they modify their management of patients based on a BMI of 30 to 34 (72%), 35 to 37 (98%), and 38 or higher (100%). Of the surgeons surveyed, 85% acknowledged that patients at their hospitals have had surgery postponed or cancelled because of obesity and either had to leave the community for their care or go without care, and 68% indicated that they have cared for obese patients at some point in their careers

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whose surgery had been postponed or declined by another provider. Regarding elective surgery, surgeons delayed or declined to perform surgery because of concerns about obesity-related complications in patients with a BMI of 30 to 34 (77%) and in patients with a BMI of 38 or higher (96%). Regarding urgent surgery, surgeons delayed or declined to perform surgery in patients with a BMI of 30 to 34 (31%) and in patients with a BMI of 38 or higher (60%). When surgeons were asked if they thought their hospitals could become centres of excellence for managing obese surgical patients, 73% felt this would be possible with the adequate resources to allow for the extra time, skill, and effort needed for safe care of these complex patients.

**Conclusions:** Survey responses revealed a significant care gap existing in BC. A number of patients are waiting for or being denied surgical care because of concerns about their obesity. It is notable that 96% of surgeon respondents have delayed or declined to perform elective surgery in patients with a BMI higher than 38, and that 60% of surgeon respondents have delayed or declined to perform urgent surgery in patients with a BMI of 38 or higher. There is a clear need for provincial centres of excellence to support the work of surgeons and anesthesiologists with an interest in treating these patients and achieving better patient outcomes with the use of evidence-informed protocols and increased volume and provider experience.

## Background

In British Columbia, the prevalence of obesity is increasing at an alarming rate, mirroring trends seen throughout the world.<sup>1,2</sup> The World Health Organization defines an overweight body mass index (BMI) as 25 to 29 kg/m<sup>2</sup>, and an obese BMI as greater than or equal to 30 kg/m<sup>2</sup>.<sup>3</sup>

In 2014, 48% of British Columbians self-reported as being overweight or obese. This is an increase of 3.6% since 2010, more than double the average increase across Canada (1.7%).<sup>4</sup> Statistics Canada estimates that in 2011–12 one in four adult Canadians, or about 6.3 million people, were obese. Since 2003, the proportion of obese Canadians has increased by 17.5%.<sup>5</sup>

As our population grows heavier, surgical care providers need to acknowledge the comorbidities and risks associated with overweight or obese patients, as well as how specific perioperative concerns influence surgical management and outcomes. It is well known that obesity increases the complexity of surgery,<sup>6–11</sup> the length of surgery,<sup>12–15</sup> perioperative complication rates,<sup>10–14,16–28</sup> use of hospital resources,<sup>12,16,18,28,29</sup> and failure rates.<sup>11,17,21,24,30,31</sup> An obesity guideline from the College of Physicians and Surgeons of British Columbia<sup>32</sup> considers the suitability of patients for surgery at nonhospital medical facilities in terms of three BMI categories. Patients with a BMI of 30 to 34.9 are considered suitable surgical candidates only if they have no more than two comorbid conditions (e.g., sleep apnea, type 2 diabetes mellitus, hypertension) and the proposed surgery/anesthesia is not likely to aggravate or precipitate comorbid conditions; patients with a BMI of 35 to 38 should have only minor peripheral procedures with regional or local anesthesia; and patients with a BMI

higher than 38.1 should have surgery only “under extraordinary situations” and with the approval of the medical director.

While the surgical risks associated with obesity are recognized, what has not been well quantified is the care gap that can occur when people with an illness need but do not receive treatment.<sup>33</sup> In this study, we addressed the unmet need of obese patients in BC who are not getting access to the surgical care they require.

## Methods

We developed a questionnaire to assess the current experience of surgeons and anesthesiologists caring for overweight and obese patients, the readiness of surgeons to operate on overweight and obese patients, and the impact of the degree of obesity and the urgency of the surgery on surgeon willingness to operate. Respondents were asked about their surgical care of patients based on three risk stratification categories: BMI 30 to 34, 35 to 37, and 38 or higher.

The questionnaire was distributed in June 2015 via e-mail invitation to BC associations representing general surgeons, orthopaedic surgeons, obstetrician/gynecologists, and anesthesiologists. When combined, general surgeons, orthopaedic surgeons, and obstetrician/gynecologists represent 56% of surgical specialists in BC.<sup>34</sup>

Survey results were collected and analyzed through SurveyMonkey.

## Results

A total of 377 respondents completed our survey: 154 surgeons (53 general surgeons, 57 orthopaedic surgeons, and 44 obstetrician/gynecologists) and 223 anesthesiologists. All six health authorities in British Columbia were well represented.

All surgeons and almost all anesthesiologists (97%) indicated that

they provide care for obese patients. All surgeons reported providing care to patients with BMIs up to and including 37, while 97% of surgeons reported managing patients with BMIs of 38 or higher.

All respondents indicated that patients with a BMI higher than 35 sometimes or always require additional preoperative assessment, more preoperative medical optimization, more complex intraoperative care and monitoring, and a greater amount of postoperative care. Most respondents (94%) indicated that the same additional requirements were needed for patients with a BMI of 30 to 34. Asked if they have had to modify their management of patients because of an elevated BMI and associated comorbidities, 72% had done so for patients with a BMI of 30 to 34, 98% had done so for patients with a BMI of 35 to 37, and 100% had done so for patients with a BMI of 38 or higher.

In spite of this experience with overweight and obese patients, a large majority of surgeon respondents (85%) acknowledged that surgeries for such patients at their hospitals are postponed or cancelled because of concerns about obesity, and patients must either leave the community for their care or go without care completely. The same number of surgeons (85%) responded that they have personally postponed or declined surgery because of obesity. Elective non-life-threatening procedures are affected most significantly, but semi-elective and urgent procedures are also affected (**Figure**). Most surgeon respondents have delayed or declined to perform elective surgery in patients with a BMI of 35 to 37 (90%) and a BMI of 38 or higher (96%) because of concerns about the patient's obesity, and many surgeon respondents have delayed or declined to perform urgent surgery in patients with a BMI of 35

to 37 (40%) and a BMI of 38 or higher (60%).

Over two-thirds of responding surgeons (68%) found themselves at some point in their career caring for obese patients whose surgery was either postponed or declined by another provider.

When surgeons were asked if they thought their hospitals could become centres of excellence for managing obese surgical patients, 73% felt that this would be possible with adequate resources to allow for the extra time, skill, and effort needed for safe care of these complex patients.

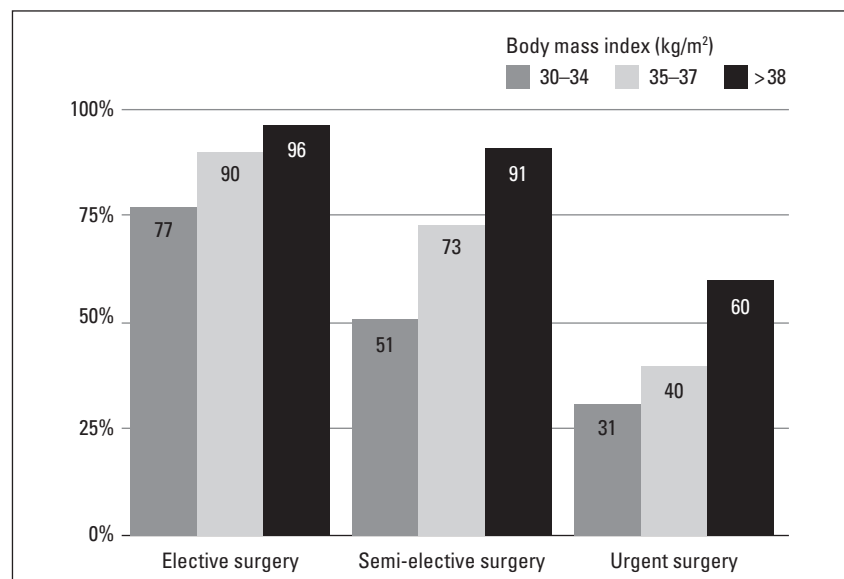
### Conclusions

Obesity is a growing problem that affects all aspects of health care. It has well-established associations with numerous medical and surgical morbidities. Obese patients have a higher incidence of cardiovascular disease, type 2 diabetes mellitus, thromboembolic events, and obstructive sleep apnea, which may independently increase perioperative morbidity

and mortality and resource requirements.<sup>16,22</sup>

Technical aspects of surgery can be significantly more challenging in patients with a body mass index over 25, and exceptionally so in patients with higher BMIs.<sup>17</sup> Longer operating times,<sup>10-15</sup> higher rates of conversion from laparoscopic to open surgery,<sup>6-8</sup> failure of oncologic resections,<sup>8</sup> and higher rates of intraoperative injury<sup>9</sup> are due to more complex technical demands in the care of obese and overweight patients. It is believed that the majority of these issues are due to problems with exposure and challenging dissection.<sup>7</sup>

Perioperative complications are some of the most well-documented obesity-related surgical problems. Risk of a thromboembolic event is significantly higher;<sup>13,16,18</sup> postoperative reintubation and cardiac arrest are more common;<sup>19,20</sup> and finally, mortality rates are also higher.<sup>19,22</sup> Rates of superficial and deep wound infections are markedly elevated in patients with excess, poorly vascular-



**Figure.** Percentage of surgeons surveyed who have postponed or declined to perform elective, semi-elective, or urgent surgery because of different degrees of patient obesity.

ized adipose tissue.<sup>11,18-20,22-24</sup> Risk of dehiscence,<sup>25,26</sup> both immediate and delayed, is also increased, and incisional hernia rates are higher.<sup>27,28</sup>

Technical failures are more common: obese patients have higher risk of intestinal anastomotic leaks,<sup>10,11,21</sup> ostomy complications,<sup>11</sup> Nissen fundoplication wrap failure,<sup>31</sup> microsurgery flap failure,<sup>24</sup> and prosthetic-related complications, including dislocation, component loosening, and poor implant survival.<sup>17,30</sup>

Anesthetic challenges arise when managing and monitoring the cardiopulmonary systems and when dosing perioperative medications.<sup>16,22</sup> A thick neck, heavy chest and abdomen, high gastric residual volume, reduced functional residual (pulmonary) capacity, and potential underlying sleep apnea and/or hypoventilation syndrome all contribute to difficulties with airway management and ventilation. More invasive or complex techniques may be necessary to establish vascular access, and obscured anatomical landmarks may complicate the insertion of invasive monitors. Poor anatomical landmarks may also limit the ability to provide effective regional (nerve block) or local anesthesia. Drug redistribution is hard to predict in overweight patients, and anesthetic agents must be carefully titrated. Opioid analgesics are used with caution in order to minimize the associated respiratory depression and potential need for postoperative reintubation. Evolving clinical practice guidelines suggest that a greater proportion of obese surgical patients with sleep apnea should be admitted overnight for monitoring.<sup>29</sup>

Finally, hospital resources required for appropriate care of obese patients may be substantial. Factors that result in a higher overall cost of caring for obese patients<sup>26</sup> include the preoperative workup, additional

intraoperative monitoring, unplanned admissions following outpatient surgery,<sup>16</sup> prolonged hospital stays,<sup>12,23</sup> and the management of perioperative complications and comorbidities such as hyperglycemia and pulmonary dysfunction.<sup>16</sup>

With the well-documented risks and costs associated with caring for obese patients, it is not surprising that

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surgery for these patients is postponed or denied. This is especially concerning because comorbidities related to obesity, including gallstones, reflux, osteoarthritis, and certain malignancies, frequently require surgical intervention.

Our survey findings indicate a care gap exists in BC. It is notable that 96% of surgeon respondents have delayed or declined to perform elective surgery in patients with a BMI of 38 or higher because of concerns about the patient's obesity, and that 60% of surgeon respondents have delayed or declined to perform urgent surgery in patients with a BMI of 38 or higher. There is a clear need for provincial centres of excellence where

surgeons and anesthesiologists with an interest in treating obese patients can use evidence-informed protocols and deliver better patient outcomes through increased volume and provider experience. Indeed, we know from the surgical literature (general, orthopaedic, cardiovascular, colorectal, and bariatric) that outcomes are improved in institutions with higher volumes—a result not simply related to the experience of individual surgeons and anesthesiologists<sup>35-37</sup> but likely due to multidisciplinary teams of care providers developing expertise in managing these complex patients and learning to recognize and treat complications early. With the infrastructure and resources to care for complex obese patients, physicians could invest the extra time, skill, and effort needed to identify and manage associated risks and comorbidities, and the result would be safer and timelier care.

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#### Competing interests

None declared.

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