



Original Contribution

Weight loss surgery and subsequent emergency care use: a population-based cohort study ^{☆,☆☆,★,★★}



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ABSTRACT

Study objective: This study assessed long-term emergency care utilization after weight loss surgery.

Methods: We conducted a self-matched longitudinal cohort analysis of weight loss surgery patients in Ontario operated between April 1, 2006, and March 31, 2011. Using population-wide registries, we compared emergency visits in the 3-year interval after surgery to the 3 years before surgery using incidence rate ratios with 95% confidence intervals. The study excluded patients with repeat surgeries, and the analysis excluded visits in the immediate perioperative interval (ie, 3 months before and after surgery).

Results: A total of 8815 patients were identified of whom most were women (81%), living in an urban area (84%), and treated with gastric bypass (99%). Approximately half (53%) were aged 25 to 45 years. Approximately half of the patients 4364 (49%) had at least 1 emergency in both preoperative and postoperative intervals, 1417 (16%) in the preoperative interval only and 1661 (19%) in the postoperative interval only. Total emergencies significantly increased from 852 per 1000 patient-years to 1000 per 1000 patient-years, equal to an incidence rate ratio of 1.17 (95% confidence interval, 1.13–1.21; $P < .001$). Compared to baseline, emergencies from gastrointestinal, genitourinary, substance misuse, trauma, and miscellaneous complaints increased significantly after surgery. Conversely, emergencies due to cardiovascular, ear, respiratory, and dermatology complaints decreased significantly after surgery. Ambulance use, triage urgency, and hospitalizations were significantly higher for emergencies after surgery.

Conclusion: Persistent and resource-intensive emergency care utilization after weight loss surgery underscores the need of long-term patient support.

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1. Introduction

Obesity is a major public health problem in developed high-income countries [1–3]. Despite extensive prevention efforts, the abundance of

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★★ Ethics statement: Ethics approval of the study protocol was obtained from review boards of the Institute for Clinical Evaluative Sciences and the Sunnybrook Health Sciences Centre.

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calorie-rich diets and limited efficacy of conventional treatments have made obesity a persistent health challenge in affected countries [4]. Recently, surgical operations aiming to reduce calorie intake have gained substantial popularity as an effective obesity treatment [5,6]. These operations, known as weight loss surgeries, are frequent in United States amounting to an estimated 179 000 operations performed in 2013 (up from 136 000 in 2004) [7]. Similar surges in weight loss surgery numbers were observed in Canada and other high-income countries [3,8].

The weight loss from the surgery occurs because of structural changes in gastrointestinal tract [7,9]. That dictate a subsequent shift in dietary and lifestyle behaviors [10,11]. Patients deviating from dietary recommendations, therefore, often experience nausea, vomiting, small bowel obstruction, gastric dumping (a constellation of symptoms resulting from eating calorie-dense foods), ulcers, and potential weight gain [11]. These adverse effects are experienced in more than 5% of patients, especially in those who disregard treatment guidelines [11–13]. Regardless,

Table 1
Emergency use before and after surgery in bariatric patients from Ontario operated during April 1, 2006, and March 31, 2011

Patient characteristics	n	%	Before and after	Only before	Only after	Neither
Total patients	8815	100	49.4	16.1	18.9	15.6
Sex						
Male	1639	18.6	47.0	18.7	17.9	16.4
Female	7176	81.4	50.1	15.5	19.1	15.4
Age (y)						
18–25	340	3.9	62.1	10.6	17.9	9.4
26–45	4665	52.9	53.0	14.6	18.5	13.9
46–64	3810	43.2	44.1	18.3	19.4	18.2
Income quintile						
Lowest	2034	23.1	55.6	14.8	17.4	12.1
Next lower	2016	22.9	50.8	15.6	19.0	14.6
Middle	1811	20.5	49.8	16.5	17.8	16.0
Next higher	1640	18.6	44.8	16.9	21.1	17.3
Highest	1282	14.5	43.4	17.2	19.3	20.0
Residence						
Urban	7386	83.8	47.5	16.5	19.5	16.5
Rural	1427	16.2	60.1	13.9	15.2	10.8
Year of surgery						
2006	472	5.4	50.8	16.5	16.7	15.9
2007	1018	11.5	49.9	16.8	20.1	13.2
2008	1814	20.6	50.6	16.0	17.4	16.0
2009	2792	31.7	50.3	15.9	18.9	14.9
2010	2130	24.2	47.6	16.1	19.3	17.0
2011	589	6.7	47.5	15.4	20.7	16.3
Type of surgery						
Gastric bypass	8688	98.6	49.6	16.1	18.8	15.5
Intestinal bypass	82	0.9	37.8	15.9	24.4	22.0
Sleeve gastrectomy	45	0.5	46.7	13.3	20.0	20.0

the average benefits of mortality and comorbidity reduction generally outweigh the common adverse effects of surgery [14–16].

The unintended effects of weight loss surgery can sometimes be a significant health care burden [11,17–19]. For instance, although medication use tends to decrease in the postoperative period [19], hospitalizations tend to double in the year after weight loss surgery [20]. Overall, surgery-related complications lead to operative interventions in

approximately 5% to 7% of patients [6,20]. Perioperative hospitalizations and reoperations are classic indicators of subsequent health care use in weight loss surgery [17,21]. Relatedly, weight loss surgery may also lead to an increase in emergency use in few studies that focus on the immediate perioperative interval; however, all of them considered only 3 months after surgery [11,22–26]. The medical literature otherwise remains silent about long-term emergency utilization after weight loss surgery. The objective of this study was to assess long-term patterns of emergency care utilization in weight loss surgery patients.

2. Methods

2.1. Study population

We included all adults aged between 18 and 64 years who underwent weight loss surgery in Ontario during April 1, 2006, and March 31, 2011. The cohort inclusion was stopped at 2011 to allow for sufficient follow-up of up to 3 years. The exclusion criteria were (1) not having a valid health card, (2) weight loss surgery not covered by the government plan (available to all those living in Canada), (3) missing records, and (4) multiple weight loss surgeries.

2.2. Study design

This study was a self-matched longitudinal cohort analysis in which the primary intervention was weight loss surgery, and the primary outcome was emergency department (ED) visit. Emergency visits were compared in the 3-year interval before surgery to the 3-year interval after surgery. The analysis excluded emergency visits in the immediate perioperative interval defined as the 3 months before and 3 months after surgery to avoid confounding by surgery preparation and complications. This analytical approach, called the exposure crossover design, has been previously used to assess the effects of distinct medical interventions [22]. Self-matching is usually robust in reducing bias related to stable individual factors that might influence emergency care such as genetics, education, and personality [22,23]. Ethics approval of the study protocol was obtained from review boards of the Institute for Clinical Evaluative Sciences and the Sunnybrook Health Sciences Centre.

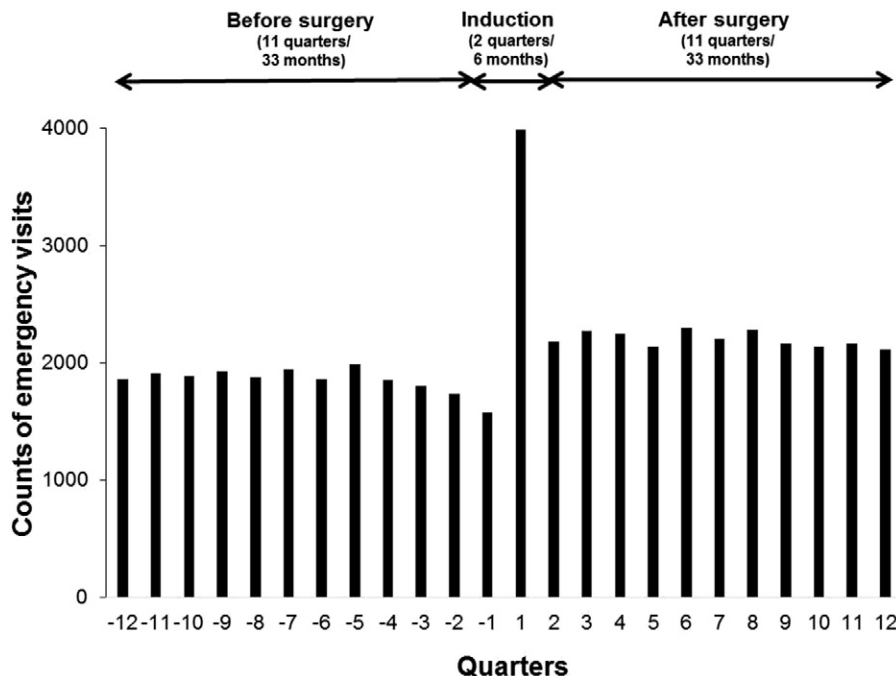


Figure. Emergency utilization per quarter (13 weeks) in bariatric patients from Ontario operated during April 1, 2006, and March 31, 2011.

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