Bariatric Surgery in Canada

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Abstract

Bariatric surgery is a treatment option for obese patients when weight-reduction strategies such as lifestyle modifications and pharmacotherapy fail. To date, bariatric surgery has resulted in sustained weight loss; the resolution of diabetes for some patients has also been observed. The objective of this study was to explore changes in-patient bariatric surgery delivery in Canada between 2004–2005 and 2008–2009.

Obesity is a major and growing problem. In 2008, 17% of adult Canadians (4.2 million) were considered to be obese, as measured by body mass indices (BMIs) of greater than 30 kg/m^2 (Statistics Canada 2008). The health consequences of obesity have been well documented and include hypertension, arthritis, diabetes, gallbladder disease and some cancers (Health Canada 2006; Tjepkema 2005; Wilkins 2004).

When weight-reduction strategies such as lifestyle modification and pharmacotherapy are unsuccessful, bariatric surgery may be a treatment option for patients with BMIs of 40 kg/m^2 or greater, or those with BMIs of 35 kg/m^2 or greater who have conditions such as diabetes (Lau et al. 2007). Bariatric surgery has achieved sustained weight loss in moderately and severely obese patients (Colquitt et al. 2009; Maggard et al. 2005). The resolution of diabetes has also been a consistently observed outcome following bariatric surgery (Buchwald et al. 2009).

Bariatric surgery has achieved sustained weight loss in moderately and severely obese patients.

Given the demonstrated benefits of bariatric surgery, Ontario and Quebec have recently made investments to increase provincial capacities to offer the surgery. The Ontario Ministry of Health and Long-Term Care has invested $75 million to increase surgical capacity by 500%, to nearly 1,500 procedures over the next three years (Ministry of Health and Long-Term Care 2009). Quebec's Ministère de la Santé et des Services sociaux has invested $29 million to increase the volume of bariatric surgery to 3,000 procedures by 2011–2012 (Ministère de la Santé et des Services sociaux 2009).

This article provides an overview of changes in in-patient bariatric surgery delivery in Canada between 2004–2005 and 2008–2009.

Data Sources and Methods

In-patient bariatric procedures performed in all acute care hospitals in Canada were captured using CIHI's Hospital Morbidity Database for 2004–2005 and 2005–2006. The Discharge Abstract Database was used for 2006–2007 to 2008–2009 data, outside of Quebec. In-patient bariatric procedures performed in Quebec in 2006–2007 and 2007–2008 were captured using Fichier des hospitalisations MED-ÉCHO, Ministère de la Santé et des Services sociaux de Québec. Quebec data for 2008–2009 were not available at the time of analysis.

Diagnosis codes for obesity were used in combination with intervention codes to define cases: ICD-10-CA – E66, obesity (all codes in category); and ICD-9 – 278.0 and 278.8, obesity. Four types of bariatric procedures were included: (1) laparoscopic gastric banding, (2) gastric bypass, (3) bilio-pancreatic diversion and (4) vertical sleeve banding. These procedures were defined using the following codes: CCI – 1.NF.78, repair, stomach by decreasing size; and CCP – 56.2, 56.93 and 56.59, gastric partitioning for obesity.

Findings

Over the five-year period, the majority of in-patient bariatric surgical procedures were performed on women (80%), with an average age of 43 years. Excluding Quebec, the average length of stay following surgery in 2008–2009 was 3.4 days – down from 5.1 days in 2004–2005. Readmission rates for the surgery were less than 2% within seven days of discharge and 4% within 30 days. Readmission rates remained stable over the five-year period.

While in-patient bariatric surgery has been performed in eight Canadian provinces over the past five years, nearly half

of these procedures were performed in hospitals in Quebec. Surgical volumes have increased most notably in Quebec and Ontario and have decreased in Saskatchewan and the Atlantic provinces (Table 1).

Table 1. Volume of in-patient bariatric surgery in Canada, 2004–2005 to 2008–2009

Province of Hospital*	Number of Bariatric Procedures				
	2004–2005	2005–2006	2006–2007	2007–2008	2008–2009
N.S.	39	22	NR	6	28
N.B.	44	60	28	37	17
Que.	407	396	643	711	†
Ont.	285	277	259	381	579
Sask.	65	56	18	16	23
Alta.	183	195	234	194	272
B.C.	129	135	143	163	160
Total	**1,152**	**1,141**	**1,325**	**1,508**	**1,079†**

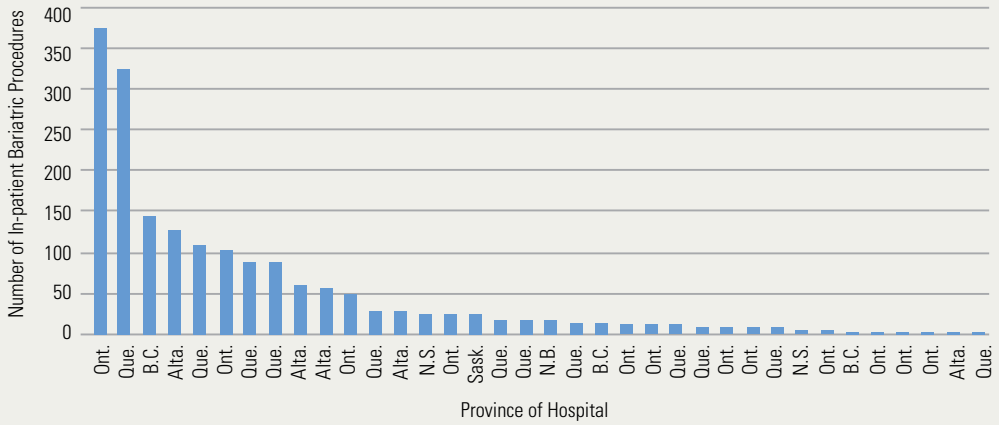
NR = not reportable; results not shown due to <5 procedures being performed, and are not reflected in totals.

*Less than 5 procedures were performed in Newfoundland, and are not reflected in the table. Bariatric surgery was not performed in Manitoba, P.E.I. or the territories.

†Quebec data for 2008–2009 were not available. A recent report suggested that Quebec provided over 800 bariatric procedures in 2008–2009 (Ministère de la Santé et des Services sociaux 2009).

Sources: Hospital Morbidity Database, 2004-2005 to 2005-2006, and Discharge Abstract Database, 2006-2007 to 2008-2009, Canadian Institute for Health Information; Fichier des hospitalisations MED-ÉCHO, 2006–2007 to 2007–2008, Ministère de la Santé et des Services sociaux de Québec.

Figure 1. Number of in-patient bariatric procedures by hospital in Canada, 2008–2009*



*Quebec data are from 2007–2008.

Sources: Discharge Abstract Database, 2008–2009, Canadian Institute for Health Information; Fichier des hospitalisations MED-ÉCHO, 2007–2008, Ministère de la Santé et des Services sociaux de Québec.

Hospital Volumes

There is limited documentation on the relationship between the volume of bariatric procedures performed and outcomes following surgery. However, a recent study suggests that an increase in surgical volumes may contribute to improvements in bariatric surgery outcomes (Encinosa et al. 2009).

In 2007–2008 for Quebec and 2008–2009 for the rest of Canada, 36 hospitals provided in-patient bariatric surgery but the number of procedures performed in each facility varied greatly. Two hospitals (one in Ontario, one in Quebec) accounted for nearly 40% of procedures in Canada. Ten hospitals in Canada performed five or fewer in-patient bariatric procedures per year (Figure 1).

Did You Know?

CIHI recently released a patient cost estimator. This publicly available tool allows users to calculate the estimated average in-hospital costs by patient groupings, excluding physician costs. Using this online tool, the Canadian average cost for reduction gastroplasty/stomach bypass with obesity was an estimated $11,150 in 2007–2008 (excluding Quebec and the territories).

Out-of-Province Patients

Between 2004–2005 and 2008–2009, at least 370 Canadians had bariatric surgery outside of their home province or territory (Quebec data for 2008-2009 were not available). Alberta had the largest inflow of patients. Nearly half of these patients were residents of Manitoba, where bariatric surgery

Table 2. Number of in-patient bariatric procedures provided to out-of-province residents, 2004–2005 to 2008–2009

Province of Hospital	Province/Territory of Residence											
	N.L.	P.E.I.	N.S.	N.B.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Total
N.S.	0	6	–	NR	0	0	0	0	0	0	0	**NR**
N.B.	6	NR	21	–	5	NR	0	0	0	0	0	**36**
Que.	NR	0	0	11	35	NR	0	0	NR	0	0	**53***
Ont.	NR	0	NR	NR	–	15	0	7	NR	0	NR	**36**
Sask.	0	0	0	0	0	17	–	5	NR	NR	0	**25**
Alta.	0	0	0	0	NR	87	46	–	30	NR	14	**184**
B.C.	0	0	0	0	0	5	8	13	–	0	NR	**27**
Total	**11**	**NR**	**NR**	**17**	**NR**	**128**	**54**	**25**	**35**	**5**	**NR**	**–**

NR = not reportable; results not shown due to <5 procedures being performed, but are reflected in totals.

*Quebec data for 2008–2009 were not available. Totals include <5 procedures performed out of province for residents of Quebec and Nunavut.

Sources: Hospital Morbidity Database, 2004–2005 to 2005–2006, and Discharge Abstract Database, 2006–2007 to 2008–2009, Canadian Institute for Health Information; Fichier des hospitalisations MED-ÉCHO, 2006–2007 to 2007–2008, Ministère de la Santé et des Services sociaux de Québec.

was not performed. Alberta also provided bariatric surgery for patients from Saskatchewan and British Columbia where surgery was available (Table 2).

Bariatric surgery may eventually play a significant role in reducing diabetes among obese Canadians.

Conclusion

Bariatric surgery appears to be a viable treatment option for obesity and may eventually play a significant role in reducing diabetes among obese Canadians. As part of Ontario's recent investment in bariatric surgery, four centres of excellence were established with the aim of increasing surgical capacity within the province. As more data become available, it will be useful to monitor patient outcomes particularly in relation to the resolution of diabetes.

The data presented in this article include in-patient bariatric surgery and, as such, provide information about the volume of surgeries performed in Canadian hospitals. Canadians, however, also access this surgery out of country and in other care settings (such as private clinics) that do not allow for data capture through CIHI's data holdings. For example, one estimate suggested that Ontario funded 1,660 patients for out-of-country bariatric procedures in 2008–2009 (Ministry of Health and Long-Term Care 2009). While it is clear that bariatric surgical volumes are increasing in Canada, this article likely underestimates the number of Canadians who are undergoing the surgery.

There has also been a shift from in-patient to day-surgery procedures, primarily for laparoscopic banding. In Quebec in 2007–2008, 24% of bariatric procedures were laparoscopic banding procedures performed in a day-surgery setting. Analyses of the shift from in-patient to bariatric day-surgery will be featured in an upcoming article.

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