

Bariatric Surgery in Canada: A Focus on Day Surgery Procedures

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Abstract

Given the rise in obesity rates, increasing capacity for bariatric surgery has become a focus for some provincial planners. Four types of bariatric procedures are now performed in Canada; however, funding for the procedures varies by jurisdiction. This article provides an update to our previous article documenting the volume of in-patient bariatric procedures but focuses on the extent to which Canadians are increasingly receiving bariatric procedures in day surgery settings.

Obesity has become a major health concern in Canada (Statistics Canada 2008). When weight reduction strategies such as diet and lifestyle modification are unsuccessful, bariatric surgery is indicated for those patients with a body mass index (BMI) of ≥ 40 kg/m² or a BMI ≥ 35 kg/m² plus a risk factor such as diabetes (Lau et al. 2007). Bariatric surgery is the surgical reconfiguration of the digestive system to limit food intake and/or caloric absorption (American Society for Metabolic and Bariatric Surgery 2009). This surgical procedure has resulted in sustained weight loss in both moderately and severely obese patients (Colquitt et al. 2009; Maggard et al. 2005). The resolution of diabetes has also been a consistently observed outcome of this surgery (Buchwald et al. 2009).

Four types of bariatric procedures are now available in Canada: (1) *gastric bypass*, where the size of the stomach is reduced to create a smaller stomach that is then connected to the middle of the small intestine; (2) *adjustable gastric banding*, where an adjustable band is placed around the upper portion of the stomach to reduce the overall size of the stomach; (3) *vertical sleeve gastrectomy*, where the stomach is stapled vertically, thereby removing more than 85% of the original stomach; and (4) *bilio-pancreatic diversion with duodenal switch*, where the size of the stomach is reduced to create a sleeve-shaped stomach that is then attached to the final section of the small intestine (American Society for Metabolic and Bariatric Surgery 2009). All four procedures can be performed via open or laparoscopic methods. There are currently no guidelines to determine which procedure is best suited for a patient.

Funding of the bariatric procedures varies across Canada. For example, in Ontario and Newfoundland and Labrador, only gastric bypass is insured (Department of Health and Community Services 2009; Ministry of Health and Long-Term Care 2009). By contrast, multiple bariatric procedures are funded in British Columbia and Quebec (Ministère de la Santé et des Services sociaux 2009; Ministry of Health Services 2009).

Like many medical procedures, bariatric surgery is shifting from an in-patient to a day surgery setting. As a result, there has been a proliferation of private clinics performing a high volume of bariatric day surgery. For example, since opening in 2005, Ontario's Surgical Weight Loss Clinic performed its 2,000th adjustable laparoscopic banding in April 2009 (Surgical Weight Loss Centre 2009).

We recently published an article that examined the volume of in-patient bariatric surgery in Canada (Arkinson et al. 2010). The purpose of this follow-up article is twofold: first, to update the volume of in-patient bariatric surgery in Canada with Quebec's 2008–2009 data; and, second, to present an overview of changes in bariatric procedures performed in day surgery settings in Canada from 2004–2005 to 2008–2009.

Data Sources and Methods

Data on bariatric surgery performed as day surgery in all Canadian hospitals, excluding Ontario and Alberta, were captured using the Canadian Institute for Health Information (CIHI) Hospital Morbidity Database for 2004–2005 and 2005–2006. The Discharge Abstract Database was used for 2006–2007 to 2008–2009, outside of Quebec, Ontario and Alberta. Data on bariatric procedures performed as day surgery in hospitals in Quebec, in 2006–2007 to 2008–2009, were captured using the Fichier des hospitalisations MED-ÉCHO, Ministère de la Santé et des Services sociaux du Québec. The National Ambulatory Care Reporting System was used to capture bariatric day surgery data in Ontario from 2004–2005 to 2008–2009. The Alberta Ambulatory Care Database, Alberta Health and Wellness, was used for Alberta, from 2007–2008 to 2008–2009. Alberta day surgery data were not available prior to 2007–2008.

The methods used to identify in-patient bariatric surgery

in Canada have been described elsewhere (Arkinson et al. 2010). Diagnosis codes for obesity were used in combination with intervention codes to define cases: ICD-10-CA – E66, obesity (all codes in category); ICD-9 – 278.0 and 278.8, obesity; CCI – 1.NF.78, repair, stomach by decreasing size; and CCP – 56.2, 56.93 and 56.59, gastric partitioning for obesity.

Findings

Volume of In-Patient Bariatric Procedures: An Update

Between 2004–2005 and 2008–2009, the volume of in-patient bariatric procedures performed in Canada increased by 63%, from 1,152 to 1,882 procedures. In 2008–2009, surgical volumes were the highest in Quebec, where 803 in-patient procedures were performed (Table 1).

Bariatric Procedures Performed as a Day Surgery

While in-patient bariatric procedures were performed in eight provinces between 2004–2005 and 2008–2009, seven of these provinces also performed bariatric procedures as a day surgery over this period. In 2008–2009, the majority of bariatric procedures performed as a day surgery procedure were on patients in their mid-forties, most of whom were women (Table 2). These patient characteristics are similar to those of patients receiving in-patient bariatric procedures (data not shown).

Volume of Bariatric Surgery Performed as a Day Surgery

The number of bariatric procedures performed as a day surgery has increased steadily from 2004–2005 to 2008–2009, most recently reaching 500 procedures. In 2008–2009, nearly two thirds of the day surgeries were performed in Quebec. Notable increases in these procedures were also observed in New Brunswick, Ontario and British Columbia (Table 3). Nearly all (99% in 2008–2009) of the bariatric procedures performed as a day surgery were laparoscopic adjustable gastric banding.

Total Volume of Bariatric Procedures in Canadian Hospitals

In combining the number of in-patient and day surgery bariatric procedures, a total of 2,385 bariatric procedures were performed in Canadian hospitals in 2008–2009, which represents a 92% increase from the 1,239 total procedures

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

Province of Hospital*	Number of In-patient 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	803
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	1,882

NR = not reportable; results are not shown due to fewer than five procedures performed and are not reflected in totals.

*Fewer than five procedures were performed in Newfoundland and Labrador are not reflected in the table.

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 2008–2009, Ministère de la Santé et des Services sociaux du Québec.

Table 2. Characteristics of patients receiving bariatric procedures as a day surgery, by province, 2008–2009

Province of Hospital	Characteristic of Patients Receiving Bariatric Day Surgery		
	Mean Age (y)	Age Range (y)	Female (%)
N.B.	45.4	19–66	78
Que.	41.2	13–67	78
Ont.	43.4	22–66	81
Alta.	36.3	24–46	100
B.C.	40.1	19–66	91

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 2008–2009, Ministère de la Santé et des Services sociaux du Québec. National Ambulatory Care Reporting System (NACRS), 2004–2005 to 2008–2009 for Ontario, Alberta Ambulatory Care Database, 2007–2008 to 2008–2009, Alberta Health and Wellness.

Table 3. Volume of bariatric procedures performed as day surgery, by province, 2004–2005 to 2008–2009

Province of Hospital*	Number of Bariatric Day Procedures				
	2004–2005	2005–2006	2006–2007	2007–2008	2008–2009
N.B.	12	22	20	32	91
Que.	69	152	160	229	313
Ont.	6	27	38	53	53
B.C.	0	8	29	19	43
Total	87 [†]	210 [†]	247 [†]	335	503

*Fewer than five procedures were performed in Nova Scotia, Saskatchewan and Alberta; these are not reflected in the table but are reflected in the totals.

[†]Alberta day surgery data were not available prior to 2007–2008.

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 2008–2009, Ministère de la Santé et des Services sociaux du Québec. National Ambulatory Care Reporting System (NACRS), 2004–2005 to 2008–2009 for Ontario, Alberta Ambulatory Care Database, 2007–2008 to 2008–2009, Alberta Health and Wellness.

performed in 2004–2005 (excluding Alberta day surgeries). In the most recent year, nearly three quarters of all bariatric procedures were performed in Quebec or Ontario.

A total of 2,385 bariatric procedures were performed in Canadian hospitals in 2008–2009, which represents a 92% increase from 2004–2005.

Summary

The number of bariatric procedures performed in Canadian hospitals has increased steadily over the past five years, in both in-patient and day surgery settings. It appears that, for some of these procedures – most notably for laparoscopic adjustable gastric banding – there has been a significant shift to a day surgery setting. As this shift occurs, the resources allocated for this particular procedure will change accordingly. For example, in 2008–2009, the average length of stay for in-patient bariatric procedures was 3.4 days (Arkinson et al. 2010), whereas it was less than one day in a day surgery setting.

There is limited documentation on the outcomes associated with bariatric procedures performed as a day surgery. However, one study suggests that with experienced staff and close follow-up, laparoscopic adjustable gastric banding can be safely and

effectively performed as an outpatient procedure (Watkins et al. 2008).

The data presented in this article include information about the volume of bariatric procedures performed in Canadian hospitals. However, Canadians also access bariatric services outside of the country and in private clinics; these data are not captured through data sources referred to in this article. Therefore, the volumes of surgeries presented in this article under-represent the extent to which Canadians are actually undergoing this surgery.

Based on medical evidence, bariatric surgery is recommended as an effective, long-term treatment option for severe obesity, and carries the benefit of recovery from conditions such as diabetes (Sjostrom et al. 2004). Previously, we have reported on the low readmission rates related to these surgeries (Arkinson et al. 2010; Jokovic et al. 2006). As both obesity and diabetes increase in Canada, the need for this surgical procedure is expected to grow. As the volume of bariatric procedures increases, it will be important to

continue to monitor the outcomes and long-term complications for both in-patient and day surgery procedures. **HQ**

References

- American Society for Metabolic and Bariatric Surgery. 2009. *Fact Sheet: Metabolic and Bariatric Surgery*. Gainesville, FL: Author. Retrieved January 21, 2010. <http://www.asmb.org/Newsite07/media/ASMBS_Metabolic_Bariatric_Surgery_Overview_FINAL_09.pdf>.
- Arkinson, J., H. Ji, S. Fallah, J. Perez and H. Dawson. 2010. "Bariatric Surgery in Canada." *Healthcare Quarterly* 13(2): 14–17.
- Buchwald, H., R. Estok, K. Fahrbach, D. Banel, M.D. Jensen, W.J. Pories et al. 2009. "Weight and Type 2 Diabetes after Bariatric Surgery: Systematic Review and Meta-analysis." *American Journal of Medicine* 122(3): 248–56.
- Colquitt, J.L., J. Picot, E. Loveman and A.J. Clegg. 2009. "Surgery for Obesity." *Cochrane Database of Systematic Reviews* 2: CD003641. DOI: 0.1002/14651858.CD003641.pub3.
- Department of Health and Community Services. 2009. *Medical Payment Schedule*. St. John's, NL: Author. Retrieved February 1, 2010. <<http://www.health.gov.nl.ca/mcp/html/schedule/toc.htm>>.
- Jokovic, A., J. Froot and K. Leeb. 2006. "Bariatric Surgery in Canada." *Healthcare Policy* 1(2): 64–70.
- Lau, D.C.W., J.D. Douketis, K.M. Morrison, I.M. Hramiak, A.M. Sharma and E. Ur. 2007. "2006 Canadian Clinical Practice Guidelines on the Management and Prevention of Obesity in Adults and Children." *Canadian Medical Association Journal* 176(8): S1–13.
- Maggard, M.A., L.R. Shugarman, M. Suttorp, M. Maglione, H.J. Sugerman, E.H. Livingston et al. 2005. "Meta-analysis: Surgical Treatment of Obesity." *Annals of Internal Medicine* 142(7): 547–59.

