Current evidence in bariatric surgery for the medical student and primary practitioner: A call for more exposure

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INTRODUCTION

Severe obesity is a chronic disease and is defined as a BMI greater than 35 with comorbid health conditions, or a BMI greater than 40 without comorbidities¹. It increases morbidity, premature mortality, impairs quality of life, leads to excess healthcare spending, and increases the risk of developing type II diabetes mellitus, micro and macrovascular complications². Conservative treatment measures commonly used for severe obesity, including lifestyle modifications and pharmacotherapy, often fail in the long term.

An important and under-discussed tool to treat severe obesity and diabetes is bariatric surgery. Bariatric surgery generally consists of surgeries which either limit the size of the stomach (restrictive procedures), bypass part of the small intestine (malabsorptive), or both². The two main procedures performed in Canada are the sleeve gastrectomy, which creates a tubular stomach, as well as the Roux-en-Y gastric bypass, which creates a small gastric pouch and bypasses part of the intestine³. Bariatric surgery also has a substantial role in diabetes treatment, prevention and cancer risk reduction, specifically for obesity-related cancers. The role of bariatric surgery in adolescents and the effects on pregnancy outcomes has also been shown but are not fully delineated at this point. Full mechanisms as to how it works, especially in relation to diabetes, are still being elucidated but hormonal shifts in addition to changes to the gut microbiology are chiefly implicated.

In addition, the demand for bariatric surgery to treat severe obesity is growing rapidly in Canada. According to a 2014 Canadian Institute of Health Information (CIHI) report, there were nearly 6000 bariatric surgeries performed across Canada which is nearly four times the number of bariatric procedures done in 2006-2007. Almost half of these surgeries were performed in Ontario⁴. Currently, the rate of bariatric surgery in Canada is one-third of that in the United States with only approximately 1 of 1000 eligible patients receiving the surgery⁵. This lack of access has driven many patients to pay out of pocket for bariatric procedures or incur significant costs to travel to the limited centers that offer these procedures⁶. This is particularly relevant to primary care physicians since they face the challenges of treating obesity on a daily basis. As well, primary care physicians are often tasked with the long-term postoperative management of bariatric patients. As such, this commentary will provide an overview of the current evidence for bariatric surgery and discuss the need for greater exposure to bariatric surgery within medical education.

Bariatric surgery

Bariatric surgery is the most effective long-term treatment option for weight loss. In the latest long-term randomized cohort study following 1156 patients after gastric bypass, Adams and colleagues have demonstrated that 12 years after surgery, mean weight loss in the surgery group was 35 kg, compared to losses of 2.9 kg and 0 kg in the two nonsurgical groups⁶. This was replicated in another study by Maciejewski and colleagues which followed 405 patients undergoing Roux-en-Y gastric bypass surgery over 10 years, and found that 71.8% maintained 20% or greater weight loss⁶. These long terms results demonstrate the superiority of gastric bypass surgery as an effective method for weight loss in the severely obese population.

Bariatric surgery is also the most effective treatment for Type II diabetes and has a substantial effect on Type II diabetes prevention. In a recent study by Adams and colleagues, Type II diabetes remission rates were 51% at 12 years with gastric bypass. This means a controlled HBA1C without the use of medications. As well, the odds of incidence of diabetes was more than 90% lower in the bariatric surgery group⁷. In 2016, the American Diabetes Association declared

https://mdprogram.mcmaster.ca/md-program-research/recognizing-student-research/mumj
that bariatric surgery is the first-line treatment for all patients with Type II diabetes and BMI >40 and for those between BMI 30-40 with inadequately controlled diabetes. Diabetes Canada has suggested a more conservative management plan and recommended consideration for bariatric surgery in adults with type 2 diabetes and BMI >35 when lifestyle interventions have failed. Further, a 2017 study by Lent and colleagues published in the Diabetes Care Journal by the American Diabetes Association found a reduction in all-cause mortality in patients with diabetes after undergoing Roux-en-Y gastric bypass surgery generally from a decrease in cancer and cardiovascular related outcomes. Overall, bariatric surgery has a significant impact on diabetes incidence and outcomes.

Bariatric surgery also reduces the risk of obesity related cancer. After a mean follow-up of 3.5 years in a matched-cohort of 22,198 surgical patients and 66,427 controls, the hazard ratio of obesity related cancers was 41% lower in the surgery group. Cancers included postmenopausal breast cancer, colon cancer, endometrial cancer, and pancreatic cancer. Furthermore, the results were most pronounced for endometrial and postmenopausal breast cancer, likely related to the decrease in circulating estrogen with weight loss. These results persisted for the duration of the 10-year follow up for the study.

In addition to adults, bariatric surgery is effective in adolescents but further study is required. In a recent cohort of 242 adolescents, mean weight loss was 27% and the remission rates of diabetes, abnormal kidney function, elevated blood pressure and dyslipidemia were 95%, 85%, 74% and 66%, respectively. However, there were risks of micronutrient deficiencies and the possibility that future abdominal procedures may be needed.

Finally, bariatric surgery has positive effects on pregnancy outcomes. A recent study by Johansson and colleagues demonstrated that the odds of gestational diabetes and large-for-gestational-age were 75% and 67% lower in the bariatric surgery group compared to matched controls. Conversely, small-for-gestational-age infants and shorter gestation (4.5 days) was observed. Preterm birth and the risk of stillbirth or neonatal death were not significantly different between groups. Notably, the vast majority of patients undergoing bariatric surgery in Canada are women within their reproductive years. In 2012, 80% of bariatric surgery patients across Canada were women and 65% of the total patients (both male and female) were under the age of 50.4 Subsequently, several authors have discussed the importance of understanding the unique challenges of antenatal care following bariatric surgery.

As with all surgeries, there is a risk of complications associated with bariatric surgery. According to data from the National Surgical Quality Improvement Program (NSQIP), between 2005-2013 in adult post-surgical bariatric patients with a pre-surgical BMI >35, the overall post-discharge complication rate was 3.2% within 30 days of surgery. The median time for presentation of complications was 10 days. The most common complications included wound infection (49.4%), reoperation (30.7%), urinary tract infection (16.9%), shock/sepsis and organ space surgical site infection (11%). The overall readmission rate was 4.9%. These complications are important to consider when counselling patients about surgery, and to ensure adequate and timely follow up for patients. In a recent review, Griffith and colleagues examined both early and late postoperative complications following laparoscopic roux-en-y gastric bypass and discussed common approaches to managing these complications including anastomotic leak and postoperative hemorrhage. However, considering the effect of gastric bypass on long-term mortality and morbidity, bariatric surgery remains an important intervention for patients with morbid obesity.

Bariatric Surgery in Medical Education

Despite the growing body of literature highlighting the importance of bariatric surgery in various illness outcomes, research in the area of medical education demonstrates a glaring lack of adequate training in obesity treatment. In a US study, Stanford and colleagues evaluated the knowledge base of primary care physicians (including family physicians and internists) related to obesity and bariatric surgery and found that those who had received more than one hour of obesity training during medical school felt more confident providing obesity care and were more likely to answer questions regarding obesity management correctly. Salinas and colleagues also demonstrated that physicians with more knowledge and positive attitudes toward obesity management as well as greater access to resources were more likely to manage obesity in the primary care setting. Furthermore, a 2012 review of obesity educational interventions in US medical schools found that there are very few published studies examining the effectiveness of obesity education in medical school curricula.

As there is a noted gap in the Canadian literature in this area, US data are utilized in this commentary acknowledging the limitations of population differences and variability of accessibility to bariatric surgery between these two contexts.

As senior medical students at McMaster University, and having completed the pre-clerkship curriculum, as well as rotations in general surgery, internal medicine, and family medicine, there has been no formal teaching on the benefits of bariatric surgery as a treatment option for severe obesity and diabetes. Review of outlined pre-clerkship topics on the McMaster student portal verifies that there is no mention of bariatric surgery throughout the pre-clerkship curriculum. As well, there is no clinical or surgical exposure to weight loss clinics or bariatric surgeries, unless students schedule electives in these specific subspecialties. Consequently, at the time of graduation, students tend to lack exposure to this topic. Though some innovative pilot programs in obesity education have been carried out at the medical school level, for example, pairing students longitudinally with obese patients undergoing bariatric surgery, the longitudinal impact of such programs on physician attitudes and approach to practice have not been examined.

According to a recent report by the Canadian Obesity Network, factors delaying treatment for obesity, including bariatric surgery, include the
following: obesity has not been verified as a chronic disease, obesity is treated as a self-inflicted illness, there are no real official guidelines for obesity management, education around obesity is provided as self-management programs, there is a lack of interdisciplinary teams and trained physicians with interests in obesity management, there is poor funding for anti-obesity medication and diets, there is poor access to bariatric surgery, and long wait times between referrals and consultations for bariatric surgery. In Ontario, the average wait time between referral and consultation is up to two years, and between consultation and surgery is six to 12 months. Given the long wait times for surgery and the significant role played by primary care providers in the care of obese patients, health professionals at all levels of care require adequate training in obesity management.

CONCLUSION

Obesity is a growing epidemic in Canada leading to increased morbidity and mortality. Though bariatric surgery is recognized as the optimal treatment to improve outcomes, greater training is needed for medical students and primary care physicians. Furthermore, there is a paucity of Canadian data regarding short- and long-term efficacy of obesity training for primary care providers. The growing population of morbidly obese Canadians, however, demands deliberate and specific medical training related to obesity and bariatric surgery.

References