

# Management of Complications after Bariatric Surgery: A Survey of Comfort and Educational Needs of General Surgeons in Ontario, Canada

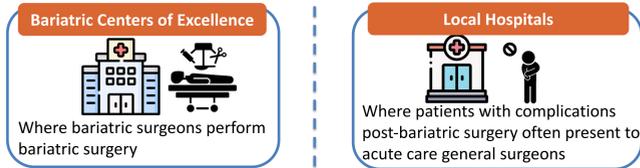
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## BACKGROUND

- Bariatric surgery is a fast growing specialty
- >25000 bariatric surgeries have been performed in Ontario to date
- Complication rates following bariatric surgery are ~10%

### Organization of bariatric surgery in Ontario



### 2012 survey<sup>1</sup>

>50% of surgeons did NOT feel confident managing complications after bariatric surgery  
73% of surgeons believed residency provided inadequate exposure to bariatric surgery

### Questions:

- Does this educational gap persist?
- If so, what educational tools should be used to address it?

## PURPOSE

The objective of this study was to conduct a survey of general surgeons in Ontario, Canada to explore their confidence and educational needs regarding management of surgical complications post-bariatric surgery.

## METHODS

### Participants

#### Inclusion criteria

- Practicing general surgeons in Ontario
- Participation in acute care surgery call

#### Exclusion criteria

- Practicing bariatric surgeons

### Survey

- Mailed out in August 2020
- Piloted with 5 academic + 5 community general surgeons

### Outcomes: (referring to managing surgical complications after bariatric surgery)

- Primary Outcome
  - Interest in continuing professional development (CPD)
- Secondary Outcomes
  - Knowledge and comfort
  - Barriers and facilitators to CPD

## RESULTS

Response rate: 138 out of 715 (19.3%) eligible participants responded to our survey

Table 1 Demographic data of study respondents.

Characteristic		Total No. of Respondents	Interest in additional CPD resources		p-value <sup>a</sup>
			Yes	No	
Completion of general surgery residency training (n = 107)	Before 1980	2 (1.9%)	2 (2.9%)	0 (0.0%)	0.22
	1980-1989	8 (7.5%)	4 (5.7%)	4 (10.8%)	
	1990-1999	22 (20.6%)	12 (17.1%)	10 (27.0%)	
	2000-2009	22 (20.6%)	18 (25.7%)	4 (10.8%)	
	2010 of after	53 (49.5%)	34 (48.6%)	19 (51.4%)	
Residency/fellowship exposure to bariatric surgery (n = 112)	Mandatory MIS/bariatric rotation	38 (32.8%)	25 (33.3%)	13 (35.1%)	0.91
	Elective MIS/bariatric rotation	11 (9.5%)	8 (10.7%)	3 (8.1%)	
	None	63 (54.3%)	42 (56.0%)	21 (56.8%)	
Fellowship training (n = 107)	Yes	58 (54.2%)	33 (47.1%)	25 (67.6%)	0.04*
	No	49 (45.8%)	37 (52.9%)	12 (32.4%)	
MIS/bariatric fellowship (n = 58)	Yes	11 (19.0%)	9 (27.3%)	2 (8.0%)	0.06
	No	47 (81.0%)	24 (72.7%)	23 (92.0%)	
Practice location (n = 107)	Rural population (<1,000)	1 (0.9%)	1 (1.4%)	0 (0.0%)	0.14
	Small urban population (1,000-29,999)	26 (24.3%)	20 (28.6%)	6 (16.2%)	
	Medium urban population (30,000-99,999)	21 (19.6%)	16 (22.9%)	5 (13.5%)	
	Large urban population (>100,000)	59 (55.1%)	33 (47.1%)	26 (70.3%)	
	Time dedicated to clinical practice (n = 107)	>75%	86 (80.4%)	63 (90.0%)	
51-74%	13 (12.2%)	3 (4.3%)	10 (27.0%)		
26-50%	7 (6.5%)	3 (4.3%)	4 (10.8%)		
<25%	1 (0.9%)	1 (1.4%)	0 (0.0%)		
Practice setting (n = 106)	Academic teaching hospital	24 (22.4%)	9 (13.0%)	15 (40.5%)	<0.01*
	Community-based teaching hospital	53 (49.5%)	36 (52.2%)	17 (45.9%)	
	Community-based non-teaching hospital	29 (27.1%)	24 (34.8%)	5 (13.5%)	
	Distance from BCoE (n = 107)	0	18 (16.8%)	5 (7.1%)	
1-4 km	10 (9.3%)	4 (5.7%)	6 (16.2%)		
5-50 km	33 (30.8%)	28 (40.0%)	5 (13.5%)		
>50 km	45 (42.1%)	33 (47.1%)	12 (32.4%)		
Unsure	1 (0.9%)	0 (0.0%)	1 (2.7%)		
Access to a bariatric surgeon (n = 106)	Bariatric surgeons take first call for patients with Bariatric complications	5 (4.7%)	1 (1.4%)	4 (10.8%)	0.03*
	There is a Bariatric surgeon in my institution who I can contact for advice	15 (14.2%)	6 (8.7%)	9 (24.3%)	
	There is a Bariatric surgeon in my institution, however I cannot contact them for advice	1 (0.9%)	1 (1.4%)	0 (0.0%)	
	I don't have a bariatric surgeon in my institution, however there is one available in a regional hospital for advice/transfer if needed	56 (52.8%)	41 (59.4%)	15 (40.5%)	
	I do not have access to a Bariatric surgeon in my institution or in my region	29 (27.4%)	20 (29.0%)	9 (24.3%)	
Number of patients you see per year with complications after bariatric surgery (n = 108)	0	6 (5.6%)	3 (4.2%)	3 (8.1%)	0.10
	1-4	68 (63.0%)	47 (66.2%)	21 (56.8%)	
	5-10	24 (22.2%)	18 (25.4%)	6 (16.2%)	
	11-15	6 (5.6%)	2 (2.8%)	4 (10.8%)	
	>15	4 (3.7%)	1 (1.4%)	3 (8.1%)	
Percentage of patients with complications after bariatric surgery you transfer to a BCoE (n = 102)	>75%	29 (28.4%)	15 (22.1%)	4 (41.2%)	0.19
	51%-75%	11 (10.8%)	8 (11.8%)	3 (8.8%)	
	25%-50%	16 (15.7%)	13 (19.1%)	3 (8.8%)	
	<25%	46 (45.1%)	32 (47.1%)	14 (41.2%)	
Type of care you are willing to provide to a patient with a complication after bariatric surgery (n = 106)	None	24 (22.6%)	15 (21.7%)	9 (24.3%)	0.01*
	Assessment and transfer to bariatric centre	9 (8.5%)	3 (4.3%)	6 (16.2%)	
	Assessment and non-operative management	6 (5.7%)	1 (1.4%)	5 (13.5%)	
	Assessment and endoscopic management	7 (6.6%)	6 (8.7%)	1 (2.7%)	
Assessment, endoscopic and operative management	60 (56.6%)	44 (63.8%)	16 (43.2%)		

Data reported as number of responses (percentages). \*Statistical significance reported as p<0.05 (chi-squared test). <sup>a</sup>Comparing participants who are interested in additional CPD resources on management of surgical complications post-bariatric surgery and those who aren't. Abbreviations: CPD – Continuing Professional Development, MIS – Minimally Invasive Surgery, BCoE – Bariatric Centre of Excellence.

## Key Findings

**54%** of surgeons had no exposure to bariatric surgery in residency/fellowship

**75%** of surgeons were confident **diagnosing** complications post-bariatric surgery

**49%** of surgeons were confident **managing** complications post-bariatric surgery

**67%** of surgeons agreed that surgical management of complications after bariatric surgery **should be within the skillset of a general surgeon**

**49%** of surgeons received **inadequate training in residency** to diagnose and manage such complications

**66%** of surgeons were interested in **additional CPD resources** on surgical management of complications after bariatric surgery

- Hands-on workshops, online resources, live webinars** = preferred CPD formats
- Location and cost remain barriers to CPD

### Surgeons interested in additional CPD resources were

- LESS likely to have prior fellowship training
- MORE likely to dedicate a greater proportion of their time to clinical work
- MORE likely to practice in a community-based hospital
- MORE likely to be a greater distance from nearest BCoE
- LESS likely to have access to a bariatric surgeon at their institution
- MORE likely to provide comprehensive surgical and endoscopic care to patients who present with complications after bariatric surgery

## Knowledge and level of comfort about complications after bariatric surgery

95.1% questions on diagnosis of complications post-bariatric surgery were correct  
66.7% questions on management of complications post-bariatric surgery were correct

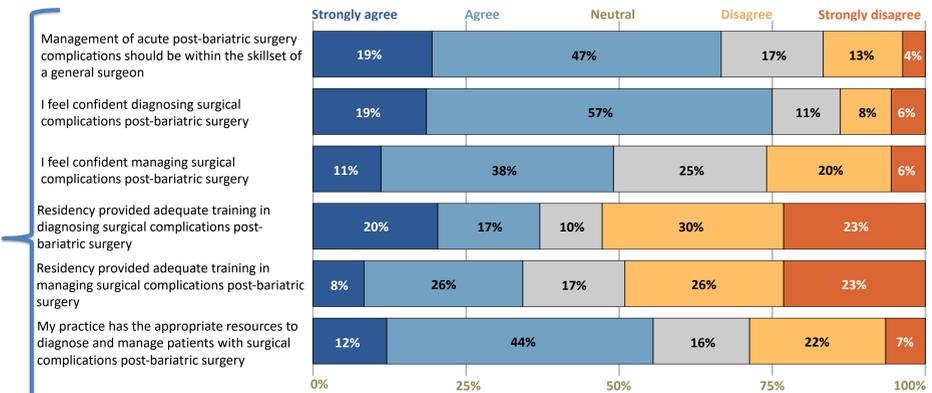


Figure 1. Level of comfort in diagnosis and managing complications after bariatric surgery. Data reported as percentages (n = 108) based on Likert Scale responses.

## Preferences of CPD resources on complications after bariatric surgery

Table 2 Preferences, motivators and barriers for CPD resources focused on complications after bariatric surgery.

Rank	Preferred format	Motivators	Barriers
1	Hands-on workshops	Interest	Lack of interest
2	Online resources	Patient care	Location
3	Live Webinars	CPD credits	Cost
4	In-person training	Location	Time
5	Hybrid online and hands-on course	Time	Remote access
6	Didactic lectures	Cost	Patient care
7	Telementoring	Remote access	Teaching method
8		Teaching method	CPD credits

Of those interested in CPD:

- 67% willing to spend 1-3 hours on resources
- 52.9% willing to pay \$50-\$300 for resources

## CONCLUSIONS

- There is both an educational need and interest for additional CPD resources addressing management of complications post-bariatric surgery
- Online CPD education that is delivered over multiple sessions may help address the current gap in confidence of general surgeons taking care of patients who present with complications following bariatric surgery

## FUTURE DIRECTIONS

- Develop CPD resources addressing surgical management of complications following bariatric surgery
- Target engagement of surgeons in the community who are more likely to be interested in additional CPD resources on this important topic

## REFERENCES

- Hirpara DH, Cleghorn MC, Kwong J, Saleh F, Sockalingam S, Qureshy FA, et al. Perception and Awareness of Bariatric Surgery in Canada: a National Survey of General Surgeons. *Obes Surg*. 2016;26(8):1799-1805.