Characterizing Timing of Postoperative Complications Following Elective Roux-en-Y Gastric Bypass and Sleeve Gastrectomy

Anna Mierzwa, Valentin Mocanu, Gabriel Marcil, Jerry Dang, Noah Switzer, Daniel Birch, Shahzeer Karmali
Department of Surgery, University of Alberta, Edmonton, Canada

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Characterizing Timing of Postoperative Complications Following Elective Roux-en-Y gastric Bypass and Sleeve Gastrectomy

Anna S Mierzwa [1], Valentin Mocanu [2], Gabriel Marcil [2], Jerry Dang [2], Noah J Switzer [2], Daniel W Birch [2], Shahzeer Karmali [2]

Affiliations + expand

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Background

- Obesity in North America has more than doubled in the last 20 years.[1]
- Where medical management often fails[2], bariatric surgery provides sustainable weight loss and improvement in obesity-related comorbidities[3].
- Bariatric surgery is safe and well tolerated, but postoperative complications can be associated with significant morbidity and mortality.[4]
- Understanding the timing of postoperative complications enables early diagnosis and prompt care.[5] However, the timing of complications following bariatric surgery is unknown.

Methods

Retrospective study of MBSAQIP database, 2017-2018

Includes all Roux-en-Y gastric bypass (RYGB) and sleeve gastrectomy (SG) procedures

Characterize timing of postoperative complications into early (<10 days) and late (≥10 days)

Results

Demographics

- 316,314 patients
  - Roux-en-Y gastric bypass: 79,248
  - Sleeve gastrectomy: 237,066
- 80.3% female
- Average age: 44.4 years
- Average BMI: 45.2 kg/m^2
- Sleeve gastrectomy cohort was younger, had lower pre-operative BMI, and had fewer metabolic comorbidities

Timing by Procedure

	RYGB	SG	p-value
Cardiac			
Myocardial infarction	3.7	5.3	0.5
Cardiac arrest	7.9	5.4	0.05*
Pulmonary			
Pneumonia	6.6	7.3	0.9
Ventilator	6.6	6.6	0.6
Neurologic			
Cerebral vascular accident	7.2	8.6	0.6
Peripheral nerve injury	7.5	9.4	0.7
Renal			
Acute renal failure	6.8	9.3	0.03*
Progressive renal failure	7.1	8.9	0.3
Infectious			
Superficial infection	12.5	14.0	0.001*
Organ space infection	10.8	12.6	0.001*
sepsis	9.8	11.9	0.01*
Septic shock	6.8	10.2	0.002*
C. difficile infection	11.4	11.2	0.8
Urinary tract infection	14.1	14.0	1.0
Hematologic			
Transfusion within 72 hrs	1.5	1.4	0.04*
Pulmonary embolus	11.3	13.7	0.003*

Table: Time to complication in days by bariatric procedure. * = statistically significant

Timing of Complications



Cardiac

Early (<10 days)

Myocardial infarction 4.7 days
Cardiac arrest 6.4 days



Pulmonary

Ventilator 6.6 days
Pneumonia 6.9 days



Renal

Progressive renal failure 8.1 days
Acute renal failure 8.2 days



Neurological

Cerebral vascular accident 8.3 days
Peripheral nerve injury 8.4 days



Infectious

Late (≥10 days)

Sepsis 10.1 days
C. difficile infection 11.2 days
Organ space infection 11.7 days
Superficial infection 13.2 days
Urinary tract infection 14.0 days

Discussion

- The order of complications brings the old surgical dictum of "wind, water, wound, walk" into question.
- Complications occur later in the SG cohort compared to the RYGB cohort. This may be associated with:
  - Difference in patient demographics due to patient selection by procedure.
  - Increased physiological insult associated with RYGB procedure.
  - Formation of distal anastomoses in the gastrointestinal tract increasing burden of infection in the RYGB cohort.
- With 'Enhanced Recovery After Surgery' protocols, patients are discharged within 2-3 days. Many of these complications will be treated as outpatient or in the emergency department.

Conclusion

- Early complications: cardiac, pulmonary, renal, neurological
- Late complications: infectious
- Timing of complications varies by procedure

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