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Decreasing length of stay in bariatric surgery: The power of suggestion

W.W. Sheaffer, R.W. Day, K.L. Harold, J.T. Kidwell, J.L. Tiede, T.R. Benjamin, S. Bersoux, J.A. Madura II *

Department of General Surgery, Mayo Clinic, Arizona, USA

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ABSTRACT

Objective: Enhanced recovery has been utilized to decrease length of stay and cost in bariatric surgery. We have recently focused efforts on pre-operative education with regards to discharge on the first post-operative day. The aim of this study was to determine the effectiveness of pre-operative education on discharge timing and readmission rates.

Methods: A retrospective review was conducted after revising discharge expectation education. Patients undergoing first time bariatric operations were included. Early group education focused on average patient stay of 2 postoperative days. Revised education informed patients they could go home on the first post-operative day.

Results: A total of 125 patients met inclusion criteria. Implementation of preoperative education was associated with a decrease in mean LOS and greater percentage of patients discharged on post-operative day one. There was no difference in readmission and complication rates.

Conclusion: Effective pre-operative education can decrease length of stay in first time laparoscopic bariatric surgery.

1. Introduction

The management of obesity is an ever-evolving field. As we continue to find no durable and reliable medical solution to obesity, our efforts to further advance surgical therapies has brought us through a variety of procedures with differing mechanisms and morbidities.[1,2] With the introduction of laparoscopy, minimally invasive gastric bypass ultimately gained favor in the 90's and provided a durable minimally invasive weight loss solution, with attendant decreases in morbidity and debility compared to open procedures. While previous iterations of purely restrictive bariatric operations have fallen out of favor, the laparoscopic sleeve gastrectomy has found a favorable place in the bariatric surgery community.[3]

Today, first time bariatric operations are almost exclusively performed in a minimally invasive fashion. Accredited centers are required to have extensive pre-operative evaluations, surgical specialists, standardized post-operative care, and long term post-operative follow up. Implementation of standardized care has reduced morbidity and mortality and has steadily reduced length of stay in this population.[4,5] As the safety of early discharge has become more widely accepted, we now strive to further reduce length of stay in hopes of decreasing cost without negatively impacting outcomes.

ERAS (Enhanced Recovery After Surgery), originally described by Kehlet for management of elective colorectal cases and since applied to liver and pancreatic surgeries, is now becoming much more prevalent in the field of bariatric surgery. While center specific fast-track and enhanced recovery protocols have been initiated in previous years, it wasn't until recently that Thorell et al. released official ERAS society recommendations regarding enhanced recovery after bariatric surgery.[6,7] Subsequent studies have demonstrated the safety and efficacy of enhanced recovery/fast track programs showing a decrease in LOS without associated increased morbidity or readmission rates.[8–11] The Mayo Clinic in Arizona has adopted a program utilizing enhanced recovery concepts and has made efforts to further optimize patients' perioperative experience. To further advance patient care, recent focus has been placed on educating patients of the expectation and safety of early discharge. To evaluate the effect of a simple education process, we performed a retrospective review of our length of stay before and after this intervention: reinforcing an expectation that most patients can be

* Corresponding author.
E-mail addresses: sheaffer.william@mayo.edu (W.W. Sheaffer), madura.james@mayo.edu (J.A. Madura).

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discharged on the first post-operative day. We anticipate that with increased education of early discharge, we can safely decrease length of stay without adversely affecting peri-operative complications or readmission rates.

2. Methods

2.1. Data collection

A retrospective review was performed for all patients undergoing laparoscopic roux-en-y gastric bypass or laparoscopic sleeve gastrectomy from June 2014 through May 2016. Patients were placed into pre and post-intervention arms with intervention being an education process informing patients that they were expected to be discharged on the first post-operative day.

In June of 2015, education material was changed from "most patients are discharged on the second day after surgery," to "most patients can go home the day after surgery." This was discussed with the patients during the initial group education seminar presented by a surgeon, and again on at least two occasions during the education process, and in the immediate preoperative surgical discussion on the day of surgery. Pre-intervention patients included those undergoing the above procedures from June 2014 through May 2015, one year leading up to the intervention. The post-intervention arm spanned one year after the intervention. Exclusion criteria included all open operations, revision operations, and patients with previous extensive foregut surgeries. Patients undergoing additional procedures such as umbilical hernia repair, cholecystectomy, liver biopsy, and hiatal hernia repair at the time of operation were included in this study. Both bariatric surgeons had over 10 years experience in bariatric surgery and over 2000 procedures combined.

Pre-operative demographics were collected including age, sex, and BMI. Comorbidities were gathered including presence of: hypertension, diabetes, atrial fibrillation, congestive heart failure, thromboembolism history, coronary artery disease, obstructive sleep apnea, COPD, anticoagulation, and immunosuppression. Intraoperative data included length of procedures, blood loss, and whether additional procedures were performed.

Length of stay, peri-operative complications, and readmission rates were collected for post-operative data. Length of stay was calculated as number of midnights in the hospital.

2.2. Pre-operative intake and education

All patients in the study went through the bariatric CHANGE program. This includes initial attendance of information sessions followed by multidisciplinary evaluation at the bariatric intake clinic. Patients are evaluated by a surgeon, internist, psychologist, and dietician at the time of initial evaluation. A monitored weight loss program is instituted prior to any operative intervention. A final preoperative visit with the bariatric surgeon occurs prior to the operation.

Patients in both the pre and post-intervention arms received identical education with the exception of day of discharge expectations.

2.3. Post-operative care standardization

Immediately post-operatively patients are transferred to a standard medical surgical floor. Nasogastric tubes are not routinely used. Patient controlled analgesia and additional non-opioid adjuncts are used for pain control. Patients are maintained on IV fluids following the operation. On the first post-operative day, foley catheters are discontinued, medications are changed to oral, and patients are initiated on a liquid diet. Barium swallows are not routinely obtained. Patients are monitored through the day and ultimately allowed to discharge home if criteria are met. Discharge criteria consist of adequate oral intake greater than 500 mL, unassisted ambulation, adequate pain control, spontaneous voiding, and vital signs being within normal limits.

2.4. Statistical analyses

Analysis was performed using SPSS v 22.00.0.0. Pre-operative demographics, comorbidities, intraoperative data, and post-operative outcomes were compared between the pre- and post-intervention arms. Chi-square test was utilized for all categorical variables with Fisher exact test used when value was expected to be less than 5. Continuous variables were analyzed utilizing the Mann-Whitney-U test.

Multivariate analysis was performed to assess demographics, comorbidities, and intraoperative data amongst patients with first post-operative day discharge versus late discharge.

3. Results

In total, 183 patients underwent bariatric surgery from June 2014 through May 2016.58 patients were excluded for having either an open operation, redo bariatric procedure, or prior history of foregut surgery. Of the 125 patients that met inclusion criteria, 54 patients were in the pre-intervention arm and 71 patients in the post-intervention arm. In total, 116 patients underwent laparoscopic roux-en-y gastric bypass and 9 patients underwent laparoscopic sleeve gastrectomy. Of the 9 patients undergoing sleeve gastrectomy, 5 were within the pre-intervention and 4 post intervention.

In comparing the pre and post intervention group, there was no difference between age, gender, hypertension, diabetes mellitus, atrial fibrillation, CHF, prior thromboembolic disease, chronic kidney disease, liver dysfunction, coronary artery disease, obstructive sleep apnea, COPD, or anticoagulation. There were differences in BMI and hyperlipidemia (Table 1).

Table 1
Pre-operative demographics, intraoperative, and post-operative data.

Pre-operative Factor	Early (n = 54)	Late (n = 71)	p-value
Age, median (IQR)	56 y (46–64)	51 y (40–63)	0.175[b]
Female Sex	67%	72%	0.534
BMI, mean ± SD	41.7 ± 6.0	44.4 ± 6.7	0.017[b]
Hypertension	78%	64%	0.093
Diabetes mellitus	52%	49%	0.777
Hyperlipidemia	72%	44%	0.035
Atrial Fibrillation	6%	6%	1.000[a]
CHF	6%	0.0%	0.082[a]
Prior thromboembolic disease	6%	0.0%	0.082[a]
Renal insufficiency	4%	6%	0.694[a]
Liver Dysfunction	17%	13%	0.584
Coronary Artery Disease	15%	7%	0.157
Obstructive sleep apnea	59%	67%	0.397
COPD	0.0%	1%	1.000[a]
Anticoagulation	7%	4%	0.698
Complications	11%	11%	0.978
Concurrent procedure	43%	24%	0.027
OR Time, mean ± SD	131 ± 27 min	117 ± 27 min	<0.001
EBL, mean ± SD	23.7 ± 25.1	19.1 ± 18.2	0.384[b]
LOS, mean ± SD	2.3 ± 1.1	1.8 ± 0.9	<0.001[b]
LOS > 1D	85%	52%	<0.001
Readmission	8%	9%	1.000[a]

Chi-square for all categorical variables.
IQR = Interquartile Range, SD = Standard Deviation.
[a] Denotes Fisher's Exact Test.
[b] Denotes Mann-Whitney-U Test.

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