Laparoscopic Roux-en-“W” Gastric Bypass

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ABSTRACT

Objectives: Roux-en-Y gastric bypass is the gold standard for treating morbid obesity in this country. The totally laparoscopic performance of this procedure, although quite demanding and technically difficult, has revolutionized it; and the demand for it has skyrocketed. We describe 2 cases where it became necessary to convert the Y into a “W” while performing the procedure.

Methods: A laparoscopic Roux-en-Y gastric bypass was attempted on 2 patients, 1 male and 1 female, both with body mass indexes greater than 40. During creation of the side to side jejunojunostomy, ie, the Y, it became obvious that stenosis or obstruction would result. This area was partially resected and an additional side to side anastomosis was formed, creating a “W.”

Results: The operative time was 205 minutes and 180 minutes, respectively, which compared favorably with the average operative time of 151 minutes in that quartile of patients (patients #101–#150). Both patients had normal upper gastrointestinal and small bowel contrast x-rays the day following surgery and were started on clear liquids. They were discharged later that day. Weight loss of 119 lb at 8 months and 80 lb at 6 months was documented, respectively, with no gastrointestinal sequelae.

Conclusion: If problems are encountered when creating the Y of a laparoscopic Roux-en-Y gastric bypass, a laparoscopic Roux-en-W may be performed. It appears safe, technically feasible, and with a postoperative course not unlike that of the standard approach.

Key Words: Laparoscopy, Roux-en-Y gastric bypass, Jejunojejunostomy, Roux-en-W gastric bypass.

INTRODUCTION

The Roux-en-Y gastric bypass is considered the gold standard for treating morbid obesity in this country. The advent of laparoscopic Roux-en-Y gastric bypass (LapRYGB) has all but revolutionized the procedure, and the demand for the surgery has skyrocketed. Referring physicians, patients, friends of patients, and the Internet have all made the LapRYGB common knowledge. It is featured in national magazines, newspapers, television talk shows, and other forms of the media. With the increased demand for the procedure comes an extremely technically difficult laparoscopic procedure felt to be a 9 on a scale of 10, with 10 being the most difficult. It is obviously performed on a very difficult patient population due to their extreme obesity and their multitude of medical problems.1,2

I performed my first LapRYGB March 9, 2000, and in 27 months performed 240 procedures to completion. In 2 of these procedures, it became necessary to convert the Y into a W, ie, laparoscopic Roux-en-W gastric bypass. These 2 cases of laparoscopic Roux-en-W gastric bypass are presented as an alternative to the LapRYGB when compelled to make this adjustment in the operating room.

CASE REPORTS

Case 1

GD is a 46-year-old white male who is 6’3” and 363 pounds with a body mass index (BMI) of 48 admitted for LapRYGB. He had multiple medical problems including hypertension, coronary artery disease, type II diabetes mellitus, arthritis, and hypercholesteremia. His past surgical history includes a tonsillectomy and 3 balloon angioplasties. On the day of admission, he was taken to the operating room and a LapRYGB was attempted. Unfortunately, the jejunojunostomy, ie, the Y portion of the procedure, was inadequate and appeared narrowed and needed to be converted to a W. Thus, the laparoscopic Roux-en-W was created. The patient did well postoperatively. He had a normal upper gastrointestinal series and small bowel follow through the following day and was
discharged that same day on postoperative day #1 (POD#1).

**Case 2**

KK is a 41-year-old white female who is 5’5” and 260 pounds with a BMI of 43 admitted for a LapRYGB. She had multiple medical problems including hypertension, type II diabetes mellitus, a history of deep vein thrombosis (DVT), depression, and dyspnea on exertion. Her past surgical history included a total abdominal hysterectomy and bilateral salpingo-oophorectomy, 2 cesarian deliveries, breast reduction, and cervical discectomy. On the day of admission, she was taken to the operating room where a LapRYGB was attempted. Unfortunately, the jejunojejunostomy, ie, the Y, could not be performed adequately and appeared narrowed and this was converted into a W. A laparoscopic Roux-en-W gastric bypass was completed. The patient did well postoperatively and had a normal upper gastrointestinal series with small bowel follow through the following day. She was discharged that same day, POD #1.

**METHODS**

The creation of the jejunojejunostomy, or the “Y” of the laparoscopic Roux-en-Y gastric bypass is a very important component of a very technically demanding procedure. It is formed in the standard side-to-side fashion, albeit laparoscopically, with a linear stapling device. After firing the stapler, one is left with closure of the enterotomy where the stapler was inserted to complete the anastomosis. This is usually done with 1 or 2 firings of the linear stapler. It is obvious that this closure must be watertight, but it is also essential that the Roux limb not be narrowed by its closure. The Roux limb is the conduit where chewed or “partially” chewed food must pass. Also, essentially no significant digestion occurs until the food bolus hits the jejunojejunostomy. It is for these reasons that it is paramount that the Roux not be kinked or narrowed at this site. In the 2 aforementioned patients, it was painfully obvious that this was not achieved.

Rather than converting to an open procedure, a laparoscopic Roux-en-W was performed (Figure 1). Because part of the anastomosis was already created with a 60-mm stapling device, it was felt that resecting part of it would not narrow the anastomosis significantly. Also, the contents from that part of the GI tract is from the gastric remnant that is fluid (bile, pancreatic, gastric, and duodenal secretions) with no food or particulate matter. One or 2 firings of the 60-mm linear stapling device was used to do this. The stenotic/narrowed Roux limb was then divided along the mesentery, and this portion of bowel was removed. The Roux limb was then laid side-to-side in an antiperistaltic fashion in preparation for the anastomosis. Some additional mesentery may need to be taken on the Roux limb to allow the bowel to lay correctly and avoid tension. A standard side-to-side anastomosis is formed with a 60-mm stapler and the enterotomy is then closed. This forms a W, hence a laparoscopic Roux-en-W gastric bypass.

**RESULTS**

Except for the W, the operative and postoperative course for these patients was not atypical for these 2 patients when compared with the other 238 LapRYGB patients. The average operative time during that quarter of patients (patients #101–#150) was 151 minutes. The procedure in the first patient (#101) took 205 minutes to complete. In the second patient (#149), it took less time (180 minutes), perhaps because we had already performed the procedure, were familiar with it, and felt it would work. Both of these patients had a normal upper gastrointestinal series and small bowel follow through the day following their surgery and were started on clear liquids. They tolerated these well and were discharged on postoperative day number 1, which was consistent with the overall length of stay for the first 200 patients (1.8 days). Both patients were followed up in the office and do not appear to have any ill effects from the Roux-en-W gastric bypass. They have no problems eating, have not had any bowel obstruction, and have normal bowel movements.

Patient number 1 weighed 363 pounds initially, and at 8 months postoperatively weighed 244 pounds. He is off all diabetes mellitus and hypertensive medications. Patient number 2 was 260 pounds preoperatively, and 6 months postoperatively weighed 180 pounds. She is also off her diabetic medications.

**DISCUSSION**

With the increasing number of patients having LapRYGB performed and also the increasing number of surgeons performing it, many new surgical conundrums will no doubt be encountered. If a problem is encountered when creating the Y of a LapRYGB, ie, stenosis, ischemia, kinking, or questionable integrity of the closure, a Roux-en-W gastric bypass should be considered.
Figure 1. Laparoscopic Roux-en-W gastric bypass. (A) Schematic drawing of a Roux-en-Y gastric bypass with the jejunojejunostomy or “Y” in the box. (B) Side-by-side jejunostomy being created with the enterotomy still open. (C) Completion of the Y by stapling the enterotomy closed but causing stenosis of the Roux limb. (D) Resection of the Y and the stenotic segment with the linear stapler. (E) Proximal Roux limb being made ready for reanastomosis. (F) Completed anastomosis forming a “W” and completing the Roux-en-W gastric bypass.
CONCLUSION

This technique obviates the need to convert to an open procedure and allows continuation with a laparoscopic approach. It also appears, at least in these 2 patients, to be successful with no increased incidents of bowel obstruction, diarrhea, or diminished weight loss.

References:

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