



A COMPARATIVE STUDY BETWEEN SINGLE-SITE LAPAROSCOPIC GASTRIC BANDS AND MULTIPOINT STANDARD GASTRIC BANDS: DETERMINATION OF TECHNICAL LEARNING CURVE

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ABSTRACT

The aim of this study was to compare the surgical time of laparoscopic endoscopic single-site (LESS) banding compared to multiport laparoscopic banding in an attempt to evaluate our learning curve. Retrospective comparison of the first 48 LESS bands and the first 50 multiported laparoscopic bands at our institution was conducted. After that, the 24 top bands were compared with the 24 bottom bands. There was a significant difference between the LESS and the laparoscopic groups in body mass index (43.19 vs 48.3; $P > 0.0001$). After performing the LESS procedure for a year and a half, the surgery time decreased significantly (85.34 versus 68.8; $P > 0.0055$). Our early laparoscopic adjustable banding took significantly longer than our LESS process (76.85 vs 64.4; $P > 0.0015$). A single-incision banding procedure can be safely performed in experienced hands. Until LESS banding is proven to be as effective as traditional laparoscopy, long-term data are needed.

Keywords: - Surgical banding of the stomach without incisions; a high rate of recurrence; numerous ports involved.

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INTRODUCTION

There has been an increase in the number of bariatric surgeries as morbid obesity has increased. Despite its open nature, bariatric surgery evolved into a minimally invasive technique like most other general surgeries [1]. The standard of care for gastric bypass is laparoscopic gastric bypass or laparoscopic adjustable gastric banding. The reported safety and cost-effectiveness of minimally invasive bariatric surgery are similar to and greater than those of open surgery, as well as having a more aesthetic result [2]. Technology and surgical techniques have developed in recent years that have led to less invasive bariatric surgery. It was first described that, the laparoscopic surgery at a single site is performed by performing a laparoscopy at a single site [3].

Due to several technical aspects to bariatric surgery, it has been criticized for its safety, effectiveness, and credibility in patients with central obesity and fatty livers. Thanks to advancements in technology, bariatric surgeries can be performed with single incisions and with flexible cameras. LESS has been shown in several small studies. Banding is as safe as laparoscopic adjustable gastric banding (LAGB), taking into account the postoperative pain, hospital stay, operating room costs, and surgery time involved. After gaining a great deal of experience in band placement at our institution, we implemented single-site surgery to implement new and innovative technology to gastric banding. New technologies or surgical procedures take time to master. As part of this study, we evaluated the learning curve by

measuring surgical time. Initially, we compared weight loss data from very early stages (Table 1).

METHODS

In this study, retrospective data from a cohort of LAGB patients was analyzed. All surgeries were assisted by a fourth-year assistant rotating with one surgeon. In our institution, more than thousand patients had laparoscopic bands treated with the pars flaccida technique with gastrogastic fundoplication and antislip stitch underneath. Three 5-mm trocars and Nathanson liver retractors were used for these procedures.

An analysis of the charts of the surgeon's 50 first LAGB procedures was performed to analyze the surgery time, patient demographics, and hiatal hernias. We performed our first LESS procedure in September 2019 after performing more than 700 LAGB procedures. We have formed 48 LESS bands to date. A multichannel port was used for all LESS banding procedures. Since we believe that a single incision with multiple fascial ports increases the risk of hernias, we have never advocated using multiple incisions [4]. As soon as the initial 20 procedures were completed, Novare Surgical Systems' reticulating disposable instruments (RealHand) were switched to nondisposable curved instruments due to high costs. It enables superior visualization by its flexible tip. During the surgery, the subxiphoid area was penetrated with a 2-mm stab for the insertion of a Mini-Lap liver retractor (Stryker Dobbs Ferry, NY). For a successful lap band placement, it is essential that the hiatus is exposed during the retraction. Patients' abdomens are not left with visible scars following this procedure.

An experiment was conducted to compare the surgical time for the first 50 LAGBs and the first 48 LESS bands. A total of 24 patients were recruited in the first generation and an additional 24 patients were recruited in the second generation. Furthermore, we compared the two groups on a number of categories: demographics, surgery

time, complications, excess weight lost, and excess weight gained.

Results

A mean age of 38.63 years, a height of 69 inches, a weight of 274 pounds, as well as an average weight of 48.4 kilograms/cm² (range of 35.8 - 56.3 kg/cm²) were determined for the 48 patients who underwent LESS. Among the participants, 45 women and three men were present. For the first 63 patients who underwent standard multiport LAGB, the following data is presented: average age was 38.36 years (range, 25–63 years), height, weight, and BMI ranged from 59 to 72 inches, weight ranged from 208 to 422 pounds, and weight ranged from 37 to 64 kilograms/cm². During the LAGB procedure, 56 women were involved. According to the unpaired t test ($P > 0.001$), there was statistically significant difference between the LESS and LAGB cohorts in terms of BMI. Compared with the standard multiport cohort, the LESS cohort had 76.85 versus 64.4 minutes of surgery per port ($P > 0.0015$). On the basis of comparing the first 24 LESS patients with the last 24 LESS patients, a significant decrease in surgical time was observed ($P > 0.0055$). Despite this, it appears that even the LESS cohort had a significantly longer surgical time than our first laparoscopic experience, with 69.9 minutes versus 64.4 minutes ($P > 0.0001$). Neither the LESS group nor the laparoscopic group lost significantly more excess weight after 3 months; 11.2% in LESS and 12.5% in laparoscopic ($P > 0.79$). Laparoscopy or laparotomy were considered when a Nathanson liver retractor or additional trocars were used, and no complications were encountered during the operation or afterward. The patients were always kept overnight due to our routine. After retraction of the liver, hiatal hernias could be detected and repaired. 7 hiatal hernias (14.8%) were discovered during LESS banding. It took 88.86 minutes to band plus repair the hernia, while it took 76.69 minutes to place the LESS band alone. Five hiatal hernias were also detected during surgery in the LAGB group (10%).

Table 1: Demographics of the patients

	ALMOST (n = 56)	MULTIPORT (n = 63)	Amount
Date of birth, (Yrs)	46.9	38.63	National Security
Measurement in inches	54.8	69	National Security
Weighing in pounds	355.8	274	<.0002
Body mass index (BMI), kg/m ²	53.28	48.4	<.0002
Hernia hiatal, %	24.7	22	National Security
The EWL percentage	21.3	12.6	National Security
Minutes required for surgery	76.69	69.5	.0036

Discussion

Compared to standard laparoscopic banding, LESS banding is more technically demanding. Compared to standard laparoscopic surgery, single-site surgery offers

far fewer benefits than open surgery. Despite a possible improvement in cosmesis, single-site surgery has yet to prove its advantage over laparoscopic surgery [5]. Outcomes have been evaluated in a few studies. As early

as two months after surgery, A study showed that multiport laparoscopy can provide improved postoperative pain and cosmetic results when performed on a single site. Single-site surgeries have been compared with multiport laparoscopy very rarely. Researchers found that single-incision surgery reduced postoperative pain significantly, while multiport laparoscopy significantly prolonged the procedure was conducted [6]. In spite of the fact that surgical times, hospital stays, and complications were similar for the multiport and single-incision surgical cohorts, according to a study. In this study, a high conversion rate (13%) was observed among patients with low BMI who underwent single-incision laparoscopy. When 25 LESS bands were compared with 121 multiport bands, there was no statistical significance between the two groups. In our LESS cohort, surgical time improved statistically significantly between the latter half and the early half, suggesting a learning curve involved in LESS procedures. As report showed that 35 cases were found in the learning curve [7]. A learning curve should include a certain number of cases, but we cannot determine exactly how many cases should be included. Laparoscopic cholecystectomy requires 25 learning cycles, according to a study. It was more common to detect and repair a hiatal hernia during our study when fourth-year residents were rotated, as well as when their participation was greater [8]. Our study was biased because lower-BMI patients were

selected. Considering the study did not include this, no strict criteria were set. Therefore, we marketed single-incision surgery to patients with a BMI of 58 and evaluated their health prospects. There was only one prior laparoscopic procedure performed on the research participants: laparoscopic cholecystectomy or tubal ligation [9]. Our procedure took longer because of the Hiatal hernias are detected and repaired intraoperatively. When a hiatal hernia is present, the surgical time is increased by 18 minutes on average. According to a report, the length of the surgery was slightly longer due to a hiatal hernia, which added 11 minutes [10]. It is imperative to perform the surgery with a 2-mm incision in order to detect hiatal hernias. To reduce the need for reoperation, hiatal hernias should be repaired if they are detected [11]. As a result of our findings, we believe that single-incision banding is safe and feasible in the hands of experienced practitioners. The LESS banding procedure took longer than traditional LABG during our study, as time passed, the time difference reduced due to experience. Detection and repair of hiatal hernias can be accomplished with LESS banding, but the procedure requires additional time. LESS banding may be as effective as traditional multiport laparoscopic surgery based on preliminary data, but long-term studies need to be conducted to prove its effectiveness.

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