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Laparoscopic sleeve gastrectomy without over-sewing the staple line: A case series demonstrating efficacy and minimization of both intra- and post-operative complications

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ABSTRACT

Introduction: Bariatric surgery, specifically laparoscopic sleeve gastrectomy (LSG), has become one of the standard bariatric operations in the U.S. for weight loss and improvement in associated co-morbidities. It has been shown that associated co-morbidities such as obstructive sleep apnea, diabetes mellitus, hypertension, hypercholesterolemia, and obesity have all been improved, if not cured. Many bariatric surgeons insist on over-sewing the staple line in an attempt to minimize post-operative leaks and/or hemorrhage, without substantial evidence to support the benefit of applying this additional step.

Methods: Retrospective data for the first 50 consecutive patients undergoing LGS and conversion from laparoscopic gastric banding (LGB) to LSG from September 2014 to April 2015 at Larkin Community Hospital were analyzed. All patients were seen and evaluated pre-operatively in the private practice of the bariatric surgeon. Each case was completed with two surgeons and one resident. The majority of the case was split between one of the two surgeons in the Bariatric practice and the resident assisting. The LSG was performed without over-sewing the staple line and none of the patients received an upper GI series or any pharmaceutical anticoagulation while they were hospitalized. All patients were discharged on POD# 1.

Results: Weight loss at 1 and 3 months were 19.6 lbs (8.91 kgs) and 41.3 lbs (18.8 kgs) respectively. The most common complication was hair loss in the post-operative period (3/50). No major complications including, but not limited to, leaks, fistulas, pulmonary emboli, or deep venous thrombosis were observed.

Conclusion: Our technique, to our knowledge, is the first to describe laparoscopic sleeve gastrectomy without over-sewing the staple line, no post-operative anticoagulation, no UGI series on POD#1, and discharge home on POD#1 with no major complications.

1. Introduction

Bariatric surgery, specifically laparoscopic sleeve gastrectomy (LSG), has become one of the standard bariatric operations in the U.S. for weight loss and improvement in associated co-morbidities. It has been shown that associated co-morbidities such as obstructive sleep apnea, diabetes mellitus, hypertension, hypercholesterolemia, and obesity have all been improved, if not cured, by bariatric surgery. In addition, due to the ease and simplicity of laparoscopic sleeve gastrectomy (LSG) compared to other bariatric procedures such as Roux-en-Y gastric bypass, many bariatric surgeons are now adding LSG to their armamentarium [1]. Moreover, there have been several publications which identify weight loss in the short and mid-term follow up to be comparable between LSG and Roux-en-Y gastric bypass [2–7].

A study conducted by Himpens et al. demonstrated that weight loss in LSG was greater at 1 and 3 years post-operatively when compared to laparoscopic gastric banding (LGB) [8]. In addition, the

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complications such as inadequate weight loss, erosion or misplacement of the gastric band, or poor quality of life that are associated with laparoscopic adjustable gastric banding were ameliorated with LSG, as demonstrated by Baltasar et al. [9].

The benefit of LSG is the preservation of the vagal nerves and pylorus. This limits the problems associated with functional gastric outlet obstructions and dumping syndrome [10,11].

2. Aim

The objective of this paper is to present our surgical technique and early post-operative results at 1 and 3 months of our first 50 patients who underwent LSG or conversion from LGB to LSG from September 2014 to April 2015 at Larkin Community Hospital. Moreover, we will evaluate the operation in terms of post-operative weight loss, reduction in co-morbidities, operative time, and complications (both intra- and post-operatively).

3. Materials and methods

Retrospective data for the first 50 consecutive patients undergoing LSG and conversion from LGB to LSG from September 2014 to April 2015 at Larkin Community Hospital were analyzed. All patients were seen and evaluated pre-operatively in the private practice of the bariatric surgeon. Each case was completed with two surgeons and one resident. The majority of the case was split between one of the two surgeons in the Bariatric practice and the resident assisting. One surgeon has over 10 years of experience with bariatric surgical experience.

The data analyzed included pre-operative BMI, post-operative BMI, weight loss at one and three months post-operatively, co-morbidities relieved by surgery and complications noted by the patient.

4. Surgical technique

All patients received preoperative intravenous antibiotics and DVT prophylaxis with enoxaparin and sequential compression devices. Patients were placed in a supine position with arms tucked and in steep reverse Trendelenburg. An initial 5 mm trocar was placed in the midline approximately 15 cm below the xiphoid process after using a Varess needle to achieve pneumoperitoneum. Access to the peritoneal cavity was gained under direct vision. After adequate pneumoperitoneum was achieved, a 30-degree laparoscope was used to assist with the placement of the other trocars. Four trocars (Fig. 1) were placed in the upper abdomen: 1 left 5 mm upper quadrant trocar, and 2 right upper quadrant trocars, a 5 mm (lateral) and a 15 mm (medial) for use of the stapler. The liver was retracted anterosuperiorly using a Nathanson Liver retractor (Cook Medical, Bloomington, Indiana).

First, the attachments at the Angle of His were divided by using the harmonic scalpel. Next, dissection of the omentum off the greater curvature of the stomach was initiated 5–6 cm proximal to the pylorus and continued to the Angle of His. Care was taken to preserve the gastroepiploic vessels. A 36-French (Fr) bougie was passed down the esophagus, along the lesser curvature and through the pylorus if feasible. The sleeve gastrectomy was created using a 60 mm Echelon (Ethicon, Cincinnati, Ohio) stapling device beginning from the point 5–6 cm proximal to the pylorus and continuing to the Angle of His, tightly abutting the bougie (Fig. 2). Green staple loads were continuously used (based on tissue thickness) with clipping used as necessary for any bleeding vessels.

Intra-operative gastroscopy was then performed to visualize the staple line and ensure no strictures were present. The antrum distal to the staple line or jejunum near the ligament of Treitz was then clamped, and a saline submersion test with endoscopic insufflation was performed to assess for potential leaks (Fig. 3). The resected

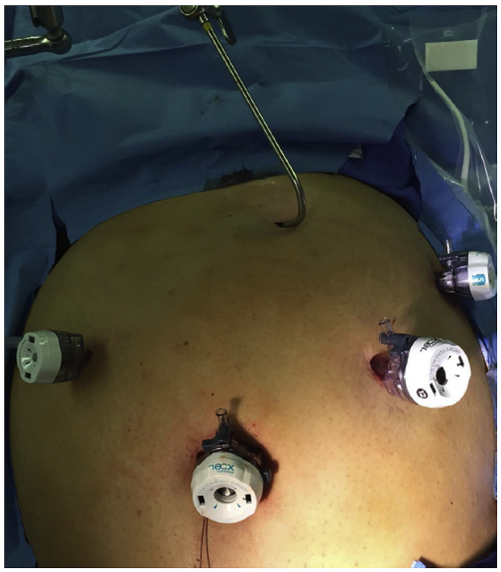

Fig. 1. Port Placement.

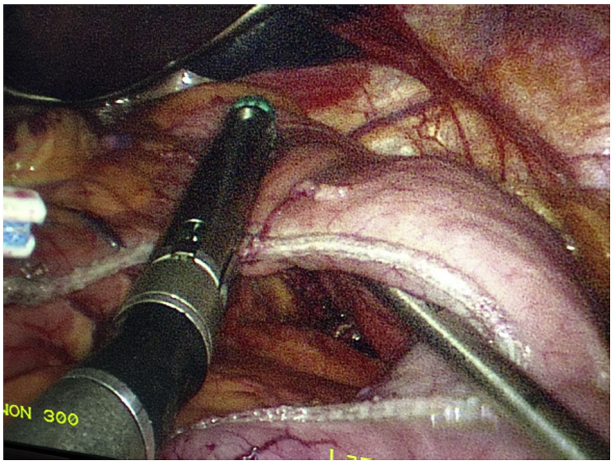

Fig. 2. Creation of Sleeve.

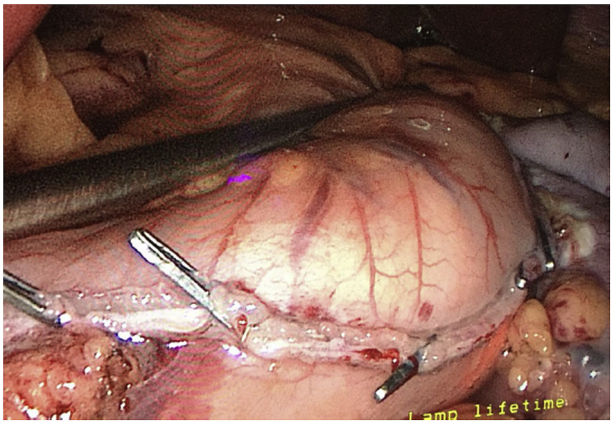

Fig. 3. Submersion test with endoscopic insufflation.