

# Laparoscopic Adjustable Silicone Gastric Banding: Preliminary Results of the University of Naples Experience

L. Angrisani MD; M. Lorenzo MD PhD; G. Esposito MD; G. Romano MD; A. Puzziello MD; A. Belfiore\* MD; T. Santoro MD; G. Roina MD; A. Petito MD; C. Falconi\* MD ChM; B. Tesauro MD ChM

Department of Surgery and \*Dietology, School of Medicine, 'Federico II' University, Naples, Italy

**Background:** Laparoscopic adjustable silicone gastric banding (LASGB) is a minimally invasive surgical procedure indicated for the treatment of patients with morbid obesity.

**Methods:** From January 1996, eight patients successfully underwent the video-laparoscopic procedure.

**Results:** Preoperative body mass index was  $44.4 \pm 4.7$  (range 37.9–53.3). Mean operative time was  $255 \pm 73$  minutes (range 150–360). Mean hospital stay was  $3 \pm 1$  days. Intraoperative complications were absent.

**Conclusion:** Preliminary results have been satisfactory, and encourage us to continue with LASGB.

**Key words:** Gastric banding, obesity, videolaparoscopy.

## Introduction

The role of surgery for the treatment of morbid obesity in the past was controversial. Potential candidates, as considered in 1991 by the NIH Consensus Development Conference on Gastrointestinal Surgery for Severe Obesity, are those with a body mass index (BMI)  $\geq 40$ , or a BMI between 35 and 40 with high risk co-morbid conditions.<sup>1</sup> Bariatric surgery is based essentially on malabsorption and/or gastric restriction. The most popular gastric restrictive procedure is the Mason vertical gastropasty.<sup>2</sup> In 1986 Kuzmak introduced silicone inflatable gastric banding<sup>3</sup> and Belachew<sup>4</sup> and Cadière,<sup>5</sup> independently of each

other, developed the laparoscopic approach for gastric banding. This study reports the initial results of the experience with laparoscopic adjustable silicone gastric banding (LASGB) performed at the University of Naples 'Federico II' Medical School.

## Methods

In January 1996 a program of minimally invasive bariatric surgery started at the 'Federico II' Medical School at the University of Naples. The NIH criteria were required in order for patients to enter the protocol of preoperative investigations. Contraindications to LASGB are: gastrointestinal pathologies (peptic disease, inflammatory bowel diseases, portal hypertension, congenital diseases, hiatal hernia  $> 5$ –6 cm); previous surgery on the upper abdomen; psychiatric disorders; infections; age  $< 16$  years. Clinical and laboratory preoperative protocol is reported in Table 1.

LASGB is performed under general anesthesia with the patient in lithotomy and anti-Trendelenburg (30–45°) position. The surgeon is situated between the patients legs, with the cameraman at patient's right, and the assistant and nurse at the left. First the 10-mm trocar is inserted several centimeters above the umbilicus. One operating trocar (10–12 mm) is placed in the upper epigastrium and another in the left subcostal area. Two 10-cm trocars for retractor instruments, for stomach and liver, are inserted in the patient's left and right flanks respectively. Closed pneumoperitoneum (CO<sub>2</sub>, 12–14 mmHg) is usually performed.

Presented at the First Congress of the International Federation for the Surgery of Obesity, Prague, Czech Republic, 27 September 1996.

Correspondence to: Dott. Luigi Angrisani, piazza Vittoria, 7, I-80121 NAPOLI, Italy. Tel: 39.81.7640633; Fax: 39.81.5466795.

**Table 1.** University of Naples 'Federico II' Medical School LASGB preoperative protocol

---

\*Clinical consultation in: anesthesiology; cardiology; dietology; endocrinology; gastroenterology; orthopedics; pneumology; psychiatry

\*Sonography of: heart; thyroid; abdomen (liver, pancreas, biliary tract, spleen, kidney); pelvic organs

\*Radiological examination of: chest; head and sella tursica; gastrointestinal tract

\*Blood tests: routine; hepatitis markers; thyroid hormones; serum cortisol and gastrin

\*Others: ECG; spirometry; endoscopy (*Helicobacter pylori*); doppler lower limbs

---

The first step is measurement of the proximal gastric pouch using a calibrating balloon (20 ml maximum inflation) (INAMED, BioEnterics). Surgical access through the hepatogastric ligament is obtained by opening the avascular space between the Latarjet nerve and the lesser gastric curvature 3 cm below the cardia. The phrenogastric ligament is opened on the greater curve, and a retrogastric tunnel is created by blunt dissection from the lesser to the greater curve. The band (INAMED, BioEnterics) is introduced into the peritoneum through an 18-mm trocar (Ethicon-Endosurgery) which replaces the left subcostal trocar. Routine gastro-stenometric control is performed before and after band closure. Three or four gastric seromuscular stitches (from the proximal to the distal compartment) prevent band dislocation. The injection reservoir is connected to the inflatable silicone tube outside the abdomen and the entire system is fixed by nonabsorbable sutures on the anterior rectus sheath.

**Results**

Eight female patients underwent an uneventful LASGB. Mean age was  $41.5 \pm 8.8$  years (range 26–50), and mean BMI was  $44.4 \pm 4.7$  (range 37.9–53.3). In one patient a cholecystectomy was associated. Mean operative time was  $255 \pm 73$  minutes (range 150–360).

Early postoperative complications observed were an erosive gastritis of the proximal pouch (n = 1), and lung atelectasis (n = 1); both resolved conservatively. Mean hospital stay was  $3 \pm 1$  days with complete rehabilitation. A late complication observed was an irreversible single massive gas-

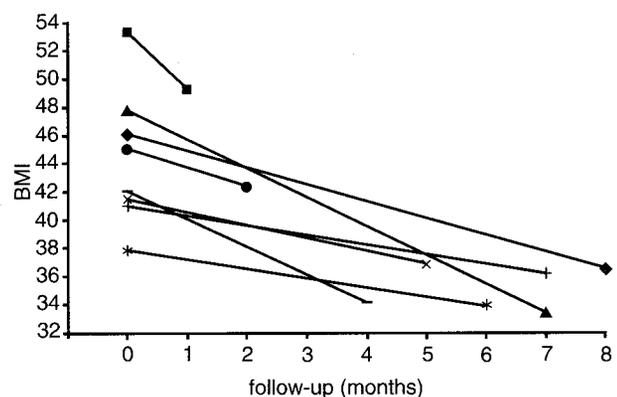
tric pouch dilation, resolved by gastric banding laparoscopic removal. Moreover, two cases of subcutaneous port dislocations occurred, and both were repaired under local anesthesia. Results of weight loss for each patient is shown in Figure 1.

**Discussion**

LASGB is an attractive surgical procedure for treatment of morbid obesity. This technique allows a dramatic reduction in gastric volume and a consequent reduction in food and caloric intake, obtained by a method which is minimally invasive for both the stomach and the abdominal wall. The proximal pouch is very small, and the system is very effective in controlling the diameter of 'new pylorus', but completely reversible.

The positive results of gastric banding by open laparotomy have been proved already by a prospective randomized trial comparing this technique with the Mason procedure; the percentage of weight loss was similar for the two groups of morbidly obese patients operated by the different laparotomic techniques.<sup>6</sup>

The laparoscopic approach for adjustable silicone gastric banding has been recently introduced into clinical practice in few centers, with slight variations in surgical technique. These need further refinements and meticulous standardization, especially for the early rehabilitation. This is an attractive goal for bariatric surgery, according to other results in abdominal surgery obtained by the laparoscopic approach. Experience in advanced laparoscopy and laparoscopic general surgical procedures in obese patients is a basic requirement for LASGB.<sup>7</sup> Preliminary results in terms of weight loss and better patient compliance



**Figure 1.** Weight loss (BMI) following LASGB.

need to be confirmed by larger series and longer follow-up.

## References

1. NIH Conference: Gastrointestinal Surgery for Severe Obesity-Consensus Development Conference Panel. *Ann Int Med* 1991; **115**: 956-61.
2. Mason EE. Vertical banded gastroplasty for obesity. *Arch Surg* 1982; **117**: 701-6.
3. Kuzmak LI. Silicone gastric banding. *Nat Bariatric Surg Registry Newsletter* 1986; **1**: 12-7.
4. Belachew M, Legrand MJ, Defechereux TH, et al. Laparoscopic adjustable silicone gastric banding in the treatment of morbid obesity. A preliminary report. *Surg Endosc* 1994; **8**: 1354-6.
5. Cadière GB, Bruyns J, Himpens J. Laparoscopic gastroplasty for morbid obesity. *Br J Surg* 1994; **81**: 1524-7.
6. Belachew M, Jacquet P, Lardinois F, et al. Vertical banded gastroplasty vs adjustable silicone gastric banding in the treatment of morbid obesity: a preliminary report. *Obesity Surg* 1993; **3**: 275-8.
7. Angrisani L, Lorenzo M, De Palma G, et al. Laparoscopic cholecystectomy in obese patients compared with nonobese patients. *Surg Laparosc Endosc* 1995; **5**: 197-201.

(Received 26 September 1996; accepted 20 October 1996)