ELSEVIER

Surgery for Obesity and Related Diseases ▮ (2013) 00–00

SURGERY FOR OBESITY AND RELATED DISEASES

Original article

Adjustable gastric banding: a comparison of models

Subhashini M. Ayloo, M.D., F.A.C.S.*, Eduardo Fernandes, M.D., Mario A. Masrur, M.D., Pier C. Giulianotti, M.D., F.A.C.S.

Division of General, Minimally Invasive and Robotic Surgery, Department of Surgery, University of Illinois at Chicago, Chicago, Illinois

Received December 20, 2012; accepted May 6, 2013

Abstract

Background: There are several models of adjustable gastric banding in use with little evidence for choosing a particular model. The objective of this study was to evaluate factors for selecting a particular type of band in terms of weight loss, complications, and co-morbidities.

Methods: From July 2006 to May 2012, 222 patients underwent laparoscopic adjustable gastric banding (LAGB) by a single surgeon. Patient demographic characteristics, weight loss, body mass index (BMI), percentage of weight loss (%EWL), complications, and co-morbidities were retrospectively reviewed. Patients were grouped according to the band model into 6 categories: 27 LAP-BAND Adjustable Gastric Banding System VG, 25 Allergan-LAGB, 20 LAP-BAND AP^{M} Standard, 18 LAP-BAND AP^{M} Large, 34 Realize Band, and 98 Realize-C band.

Results: At 60 months follow up, in the LAP-BAND VG Group, the mean %EWL was 41%, percentage of co-morbidity improvement was 66%, and percentage of complications was 14.3%; the same percentages in the Allergan-LAGB Group were 41%, 0%, and 52%, respectively; in the LAP-BAND AP Standard Group were 42%, 20%, and 40%, respectively; in the LAP-BAND AP Large group were 38% , 12.5%, and 27.8%, respectively (at 48 months); in the Realize Band Group were 37%, 60%, and 0%, respectively (at 48 months); and in the Realize-C Band Group were 48%,12.5%, and 12.2%, respectively (at 36 months).

Conclusions: In terms of weight loss and co-morbidities, no differences were found supporting the choice of one model over the others. Short-term and long-term band-related complications occurred without any clear predilection. The port-related complications were significantly lower in the Realize bands. (Surg Obes Relat Dis 2013;▮:00-00.) © 2013 American Society for Metabolic and Bariatric Surgery. All rights reserved.

Keywords: Bariatric surgery; Gastric bands models; Adjustable gastric banding

More than 200,000 bariatric procedures are performed each year in the United States, according to the American Society for Metabolic and Bariatric Surgery. One of the most popular bariatric procedures is laparoscopic adjustable gastric banding (LAGB), due in large part to its technical simplicity, reversibility, and safety profile. It also lends itself well for placement in an outpatient setting, resulting in successful weight loss and improvement in co-morbidities [1–6].

Since Food and Drug Administration approval in 2001, several band models have been manufactured. Some have evolved as an improvement from previous prototypes, while others have been developed to accommodate a variety of sizes. There is little data available, however, for guiding the surgeon in the selection of a particular band model. In fact, few studies have been published comparing the different bands available [7–11]. In this study, the long-term experience of a single surgeon at a single institution in the use of various band models is presented. The results in terms of weight loss (WL), percentage of excess weight loss (%EWL), co-morbidities, and complications were compared.

*Correspondence: Subhashini Ayloo, M.D., Division of General, Minimally Invasive and Robotic Surgery, University of Illinois at Chicago, 840 S. Wood Street, M/C 958, Suite 435 E, Chicago, 60612 IL.

E-mail: ayloosub@uic.edu

1550-7289/13/$ – see front matter
http://dx.doi.org/10.1016/j.soard.2013.09.003

Methods

From July 2006 to May 2012, a total of 222 patients were retrospectively followed up after undergoing a LAGB procedure. All procedures were performed by a single surgeon at an academic institution. The patients selected for this approach met the National Institute of Health Consensus criteria and the institutional policies for bariatric procedures. The study included all patients who underwent a LAGB procedure. No patients were excluded from the study.

Data on patient demographic characteristics, operative variables, and postoperative complications and outcomes were collected prospectively in a bariatric database and reviewed retrospectively.

Co-morbidity improvement (in type II diabetes, hypertension, hypercholesterolemia, and asthma) was defined as resolution or any improvement in symptoms and/or reduction in dosages of medications and reported as a percentage of patients.

Patients were divided for analysis into 6 different groups, according to band model and size used in the procedure. Of the 222 patients in this series, 90 received bands that were manufactured by Allergan Inc. (Irvine, CA). Of these, 27 (12.2%) received the LAP-BAND Adjustable Gastric Banding System VG (Allergan VG), 25 (11.3%) received the LAP-BAND Adjustable Gastric Banding System LAGB (Allergan-LAGB), 20 patients (9%) received the LAP-BAND AP Standard, and 18 (8.1%) received the LAP-BAND AP Large. The remaining 132 patients received bands from Ethicon Endo-Surgery Inc. (Cincinnati, OH). Of these, 34 (15.3%) patients received the Realize Band, and 98 (44.1%) patients received the Realize-C band. The determination as to which gastric band to use was made as the bands became available in the market.

Statistical analysis

Statistical analysis using the χ^2 test was performed using IBM SPSS Statistics software (Chicago, IL), and results are shown in Table 1. Statistical analysis performed as one-way ANOVA is shown in Tables 2B, 3, and 4.

Surgical technique

The surgical technique was the same for all patients, independent of the band model selected. Patients were placed in the semi-lithotomy position under general anesthesia. Pneumoperitoneum was induced using a Veress needle placed subcostal in the left upper quadrant. A 5-mm trocar (camera port) was placed to the left side of the midline supraumbilical position under direct vision, with an Endopath Xcel with Optiview Technology (Ethicon Endo-Surgery Inc, Cincinnati, OH). A 15-mm trocar and 5-mm trocar were placed on either side of the camera port for the surgeon's right and left hand. The 15-mm trocar was used to bring in the sutures, the band, and later, to exteriorize the tubing. A 5-mm trocar was placed on the left lateral abdomen for the first assistant. A 5-mm incision was made in the subxiphoid area for the Nathanson retractor (Mediflex, Islandia, NY) to retract the left lobe of the liver anteriorly. All gastric bands were placed via the pars flaccida technique.

When reviewing the technical steps of the Allergan band procedure versus the Realize band procedure, the primary differences involved the number of gastrogastric plication sutures that were placed and the port fixation. In procedures involving the Realize bands, 2 sutures of 2/0 Ethibond (Ethicon, Somerville, NJ) were used. Procedures involving the Allergan bands required 3 sutures, along with an additional gastrogastric suture placed below the band to keep it in position. Additionally, in procedures involving the Realize band, the port was fixated using a port applicator, while the

Table 1
Early and late, major and minor complications with different band models

Complications	Allergan-VG (27 patients)	Allergan-LAGB (25 patients)	AP-APS (20 patients)	AP-APL (18 patients)	Realize (34 patients)	Realize C (98 patients)	*P* value
Major Complications							>.05
Slippage		2				1	
Erosion				1			
Early PO obstruction				1		1	
Band Leak		1					
Replacement or Explantation secondary to intractable stoma tightness	1	1				3	
Band Removal	1	5		2		4	>.05
Minor Complications							<.05
Port Flipped	1	4	2	1		1	
Port Infection						1	
Port/tube disconnection or break	1		2			1	

Allergan-LAGB = LAP-BAND Adjustable Gastric Banding System LAGB; Allergan-VG = LAP-BAND Adjustable Gastric Banding System VG; AP-APL = LAP-BAND AP large; AP-APS = LAP-BAND AP standard; LAGB = laparoscopic adjustable gastric banding; PO = postoperative; Realize = Realize Band; Realize-C = Realize-C band.