Ten and More Years After Vertical Banded Gastroplasty as Primary Operation for Morbid Obesity

Bruno M. Balsiger, M.D., Juan L. Poggio, M.D., Jane Mai, R.N., Keith A. Kelly, M.D., Michael G. Sarr, M.D.

Long-term follow-up (>10 years) after vertical banded gastroplasty (VBG) is almost nonexistent. The aim of this study was to determine long-term outcome after VBG in a group of 71 patients studied prospectively. Seventy-one consecutive patients with morbid obesity (54 women and 17 men; mean age 40 years [range 22 to 71 years]) underwent VBG from 1985 to 1989 and were followed prospectively. Follow-up was obtained in 70 (99%) of the 71 patients. Weight (mean ± standard error of the mean) preoperatively was 138 ± 3 kg and decreased to 108 ± 2 kg 10 or more years postoperatively. Body mass index decreased from 49 ± 1 to 39 ± 1. Only 14 (20%) of 70 patients lost and maintained the loss of at least half of their excess body weight with the VBG anatomy. Vomiting one or more times per week continues to occur in 21% and heartburn in 16%. Fourteen patients have undergone conversion from VBG to Roux-en-Y gastric bypass (11 patients) or other procedures (3 patients) because of a combination of inadequate weight loss in 13 patients, gastroesophageal reflux in five, and frequent vomiting in four. Only 26% of patients after VBG have maintained a weight loss of at least 50% of their excess body weight; 17% underwent bariatric reoperation with good results. Thus VBG is not an effective, durable bariatric operation. (J GASTROINTEST SURG 2000;4:598-605.)

Key Words: Morbid obesity, bariatric surgery, vertical banded gastroplasty

Patients with morbid obesity have markedly increased mortality and morbidity.1-3 Successful bariatric surgery has been proved to reduce weight and associated comorbid conditions such as diabetes mellitus, hypertension, hyperlipidemia, and sleep apnea4-8 and has become an accepted therapy in selected patients. Indeed, a National Institutes of Health (NIH) Consensus Conference has “sanctioned” bariatric surgery as an accepted, effective approach.9

Currently there are two primary NIH-“sanctioned” operative approaches—vertical banded gastroplasty10 and Roux-en-Y gastric bypass.11 Our experience with nonbanded gastroplasty proved disappointing because of unsatisfactory maintenance of weight loss.12 Vertical banded gastroplasty (VBG) was therefore chosen by us as our primary operation in 1985, again as a purely restrictive procedure with no gastrointestinal “bypass.” Follow-up after up to 4 years revealed disappointing results as well13; after 3 years only 38% of patients maintained their weight after an initial loss of more than 50% of excess body weight (EBW), 30% of the patients continued maladaptive eating with vomiting one or more times a week, and 38% had symptomatic heartburn. Therefore, in 1989, we changed our primary operation to the Roux-en-Y gastric bypass (RYGB). Our patients have experienced satisfactory results with this operation; 70% have maintained a weight loss of ≥50% EBW.4 Our aim in this study is to present the prospectively collected data from our VBG patients 10 and more years after the initial operation. Little data exist on long-term follow-up (>7 years) after
VBG. We wanted to determine the success of VBG as defined by the following: (1) no need for reoperation because of VBG-related problems and (2) maintenance of loss of at least 50% EBW with VBG anatomy. Also, our goal was to evaluate outcome of patients who maintained a VBG anatomy for at least 10 years in terms of weight loss, gastrointestinal symptoms, and subjective quality of life.

PATIENTS AND METHODS

Clinical Material

From July 1985 through July 1989, 73 consecutive patients with morbid obesity (55 women and 18 men; mean age 40 years [range 22 to 71 years]) underwent VBG. Prospective follow-up data were collected to determine the success of the operative procedure in terms of weight loss, patient satisfaction, and lifestyle. Follow-up to date, death, or subsequent bariatric reoperation was 99% (72 of 73 patients). Two patients, however, declined research authorization, and their data were of necessity excluded. Patients were selected for weight reduction surgical procedures because of serious weight-related morbidity and underwent preoperative assessment by a multidisciplinary team including a psychologist, an endocrinologist, an internist, a dietitian, and a surgeon. All patients undergoing VBG, except two with weight-related morbidity, had a body mass index (BMI) ≥38 (BMI = [weight in kg] ÷ [height in meters]^2). Eighty-nine percent, however, had already developed concomitant, direct weight-related medical conditions including severe lower back or lower extremity large-joint degenerative arthropathy (63%; 16% were maintained on chronic anti-inflammatory drugs), hypertension (47%; 32% were on antihypertension medication), diabetes mellitus (31%; two patients were insulin dependent), asthma (9%; all were using regular bronchodilators), sleep apnea (14%), and venous insufficiency (11%). Most patients had a strong family history of severe weight-related comorbidity. No operations were performed for cosmetic reasons. In previous conservative attempts, all patients had failed long-term weight reduction; however, 58 (82%) of 71 had been able to lose weight (23 ± 2 kg) but were able to maintain the weight loss for only 1 to 24 months. A pamphlet detailing the different operative procedures and a separate pamphlet addressing the postoperative dietary protocol were given to all patients before operation.

Operative Procedure

We performed a modification of the VBG described by Mason^{10} (Fig. 1). The vertical staple line was applied initially by using a Surgeons Choice P1 double 90 linear stapler (3M Company, St. Paul, Minn.) and later by using an Autosuture TA90B linear stapler (U.S. Surgical Corp., Norwalk, Conn.). These staplers inserted two rows of staples simultaneously. A small proximal gastric pouch (approximately 15 to 20 ml) was made by snuggling the linear stapler against a 32 F orogastric tube positioned along the lesser curvature of the stomach; no attempt was made to quantify objectively the volume of the proximal pouch as described by Mason^{10}; however, the pouch

![Graph](image-url)  

**Fig. 1.** Weight loss after VBG, expressed as percentage of EBW lost, in the 54 patients with more than 10 years’ follow-up and a persistent VBG anatomy. We considered weight loss of ≥50% EBW as a successful result.