

Results and Complications After Swedish Adjustable Gastric Banding in Older Patients

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Abstract

Background Swedish adjustable gastric banding (SAGB) is an effective treatment for morbid obesity. The aim of this study was to assess the efficacy and safety of SAGB in older patients aged ≥ 50 years.

Methods Between January 1996 and January 2006, 134 patients (102 women, 32 men) of 785 consecutive patients who underwent SAGB during the study period were aged ≥ 50 years. Two groups of patients were analyzed: Group 50 ($n=107$) patients aged 50–59 years and Group 60 ($n=27$) patients aged 60–69 years. All data (demographic and morphologic data, operative data, and follow-up data) were prospectively collected in a computerized databank.

Results One hundred thirty-four patients (17.1%) out of 785 entered the study. Mean percentage of excess weight loss (%EWL) was 37.5 at 1 year and 48.8 at 7 years, body mass index (BMI) fell from 43.3 to 33.1 at 7 years. In the 134 patients, there were 65 patients with 121 complications (48.5%) and 69 patients with no complication (51.5%). The most common complications were esophagitis (27%), esophageal dilation (16%), port problems (11%), pouch dilation (11%), band leakage (9%), and band migration (7%). Overall, 46 patients (34%) needed a reoperation. In Group 50, mean %EWL was 38.4 at 1 year and 54.9 at 7 years. BMI fell from 42.9 to 33.1 at 7 years. In the 107 patients, there were 55 patients with 99 complications (51%) and a reoperation rate of 35.5%. In Group 60, mean %EWL was 32.8 at 1 year and 41.2 at 7 years. BMI fell from 44.3 to 34 at 7 years. In the 27 patients, there were ten

patients with 22 complications (37%) and a reoperation rate of 29.6%. There was no mortality.

Conclusions At 7-year follow-up, for older patients, SAGB is an effective bariatric procedure for achieving weight loss. Nevertheless, based on the high complication and reoperation rate, a gastric band-specific patient selection will be necessary.

Keywords Morbid obesity · Bariatric surgery · Gastric banding · Age ≥ 50 years

Introduction

Worldwide, the incidence of morbid obesity has increased dramatically. The prevalence of obesity is high in all age groups and is relevant in the elderly, which is becoming a very large component of the population in the western world [1, 2]. As diet regimes often fail to provide long-term weight reduction, the only hope for these patients is bariatric surgery. The advantages of laparoscopy over open surgery are well known; therefore, the popularity of laparoscopic techniques has led to an increasing use in obesity surgery. Nowadays, gastric banding, sleeve gastrectomy, gastric bypass, and even biliopancreatic diversion with duodenal switch have been successfully performed minimally invasive [3–6].

The aim of this study was to evaluate our experience with the Swedish adjustable gastric band (SAGB) in older patients aged ≥ 50 years.

Materials and Methods

From January 1996 until January 2006, we operated on a total of 134 patients (102 women, 32 men) aged older than

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50 years who received a laparoscopically placed SAGB (Obtech, Ethicon Endo-Surgery). Patients with a body mass index (BMI) greater than 40 or a BMI between 35 and 40 with additional obesity-related comorbidities were considered for the SAGB operation. The band was atraumatically passed behind the cardia. A high position of the band was chosen in order to form a small pouch of about 10 ml. The fat and the vagus nerve on the lesser curvature were included within the loop of the band. In addition, four nonabsorbable gastro-gastric sutures were placed over the band to avoid slipping. Prophylactic perioperative single-shot antibiotic therapy was used for each patient. All patients were given peri- and postoperative low-molecular-weight heparin and compression stockings until discharge from hospital. The mean length of hospital stay of all patients was 4.1 days, consisting of a postoperative recovery time with discharge on postoperative day 2 and an additional day for admission. After surgery, the patient was started on a liquid diet for 1 month. After a period of a further 4 weeks on pureed food, solid food was permitted. The postoperative follow-up program included appointments once a month for the first 6 months and then every third month during the first year. Thereafter, patients were seen once every 6 months for the first 2 years, and after 2 years, a control visit is planned annually. After 1 month, the balloon is filled the first time with 2 ml of iopamidol (Iopamiro 200, Astra AB, Sweden) and then, according to the weight loss, every month with an additional 1 ml depending on the patient's comfort and weight loss objectives.

Data from patients undergoing bariatric surgery have been entered prospectively in a database since the first laparoscopic gastric banding in January 1996. These include demographic and morphologic data, operative data, and follow-up data. Excess weight loss (EWL) <25% was considered as a failure; EWL >50% was considered as a success.

Statistical analysis Continuous variables were expressed as median (range) and were analyzed with analysis of variance. A p value of ≤ 0.05 was considered statistically significant. Statistical analysis was performed with the program StatView SAS® 6.12.

Results

One hundred thirty-four of 785 consecutive patients who underwent SAGB during the study period were aged ≥ 50 years (17.1%). This cohort of patients had a mean age of 55.6 ± 4.6 years (range 50–69) and a mean preoperative BMI of 43.9 ± 5.7 (range 35.3–62.7), respectively. One hundred two patients were female (76.1%).

Weight Loss

The mean change in body weight was -23.5 kg at 1 year ($n=124$), -29.5 kg at 2 years ($n=98$), -29.5 kg at 3 years ($n=73$), -27.5 kg at 4 years ($n=59$), -28.5 kg at 5 years ($n=39$), -32.5 kg at 6 years ($n=21$), and -19.5 kg at 7 years ($n=7$) following surgery. The mean change in BMI was -8.4 kg/m² at 1 year, -11.0 kg/m² at 2 years, -12.3 kg/m² at 3 years, -12.4 kg/m² at 4 years, -11.8 kg/m² at 5 years, -12.5 kg/m² at 6 years, and -10.2 kg/m² at 7 years following surgery, corresponding to a mean change in BMI was from preoperative 43.3 to 33.1 kg/m² after 7 years. The %EWL was 37.5 at 1 year, 50.7 at 2 years, 57.4 at 3 years, 56.3 at 4 years, 53.6 at 5 years, 60.6 at 6 years, and 48.8 at 7 years.

In *Group 50*, mean change in body weight was -24 kg at 1 year ($n=99$), -30 kg at 2 years ($n=77$), -29 kg at 3 years ($n=61$), -28 kg at 4 years ($n=49$), -29 kg at 5 years ($n=31$), -33 kg at 6 years ($n=16$), and -19 kg at 7 years ($n=5$) following surgery.

In *Group 60*, mean change in body weight was -26 kg at 1 year ($n=25$), -26.5 kg at 2 years ($n=20$), -35 kg at 3 years ($n=12$), -29.5 kg at 4 years ($n=10$), -30.5 kg at 5 years ($n=8$), -35 kg at 6 years ($n=5$), and -25.5 kg at 7 years ($n=2$) following surgery.

Weight loss in terms of BMI and %EWL between the both groups are shown in Figs. 1 and 2. No significant difference was found for BMI and change in body weight between the two groups, but there was a significant better %EWL in *Group 50* ($p < 0.05$) after 5 years following surgery.

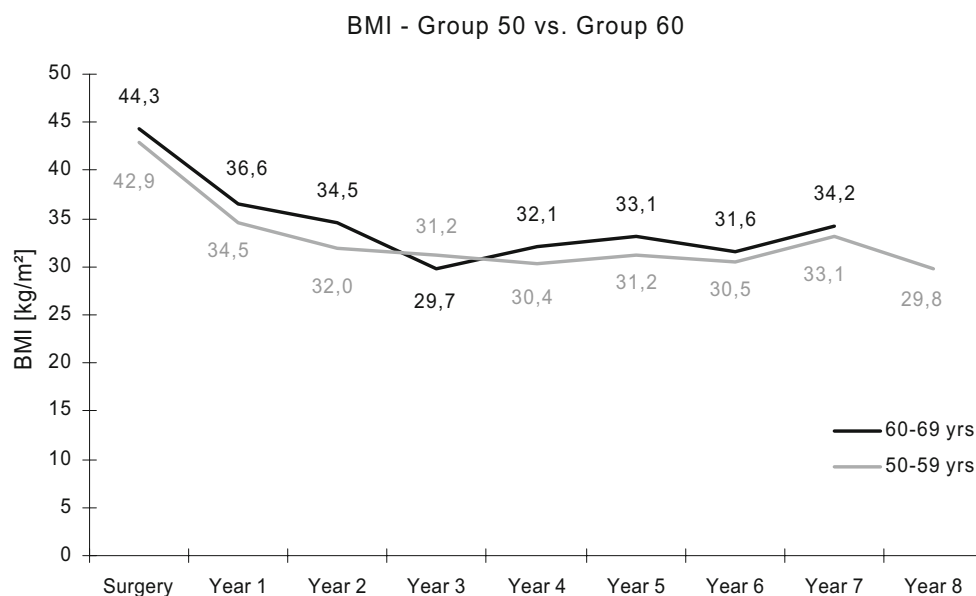
Complications

The overall mortality (short and long term) was 0%. In the 134 patients, there were 65 patients with 121 complications (48.5%) and 69 patients with no complication (51.5%). The most common complications were esophagitis (27%), esophageal dilation (16%), port problems (11%), pouch dilation (11%), band leakage (9%), and band migration (7%). Overall, 46 patients (34%) needed a reoperation.

In *Group 50* with 107 patients, there were 55 patients with 99 complications (51.4%) and 52 patients with no complication (48.6%). In *Group 60* with 27 patients, there were ten patients with 22 complications (37.04%) and 17 patients with no complication (62.96%). Postoperative complications were significantly less frequent in *Group 60* ($p < 0.05$; Table 1).

In *Group 50*, 35.51% of the patients needed a reoperation and in *Group 60*, 29.63% of the patients needed a reoperation. Postoperative complications that required reoperation are shown in Table 2. Reoperations were significantly less frequent in *Group 60* ($p < 0.05$).

Fig. 1 Change in BMI: Group 50 versus Group 60



Discussion

Laparoscopic adjustable gastric banding is one of the most frequently performed surgical procedure to treat obesity both in Europe and in the United States. According to the manufacturers, over 250,000 procedures have been performed [7]. SAGB has been shown to be a very effective weight-loss procedure [3, 8, 9]. A review on obesity in the elderly concluded that obesity, with reduced lean mass with accumulation of intraabdominal fat, is a major determinant of health status and that, as in younger population, treatment programs have the potential to decrease the

impact of diabetes, vascular disease, and other complications of obesity [10]. In the last few years, several authors have reported encouraging results of bariatric surgery in the elderly [11–14]. Weight loss has traditionally been the main outcome measure in bariatric surgery. In our study, 134 morbid obese patients had a median change in body weight of –23.5 kg at 1 year, –32.5 kg at 6 years, and –19.5 kg at 7 years following surgery; corresponding to a median change in body weight was from preoperatively 117.5 to 85 kg after 6 years and to 98 kg after 7 years. The EWL was 37.5% after 1 year, 60.6% after 6 years, and 48.5% after 7 years. These results are comparable to other recent

Fig. 2 Change in %EWL: Group 50 versus Group 60

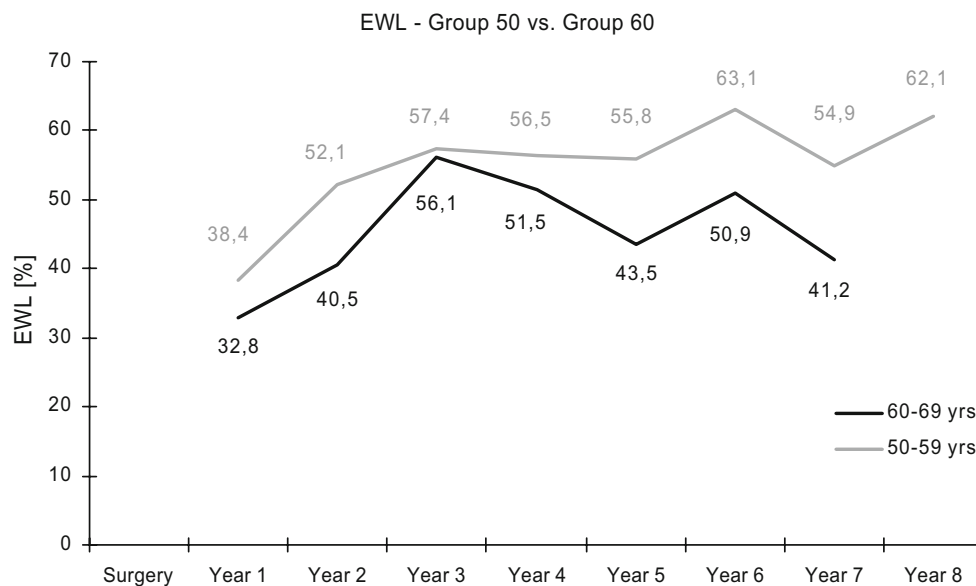


Table 1 Complications: Group 50 versus Group 60

Complication	Group 50 (<i>n</i> =107)	Group 60 (<i>n</i> =27)
1 Esophagitis	28 (26.17%)	8 (29.63%)
2 Esophageal dilation	17 (15.89%)	5 (18.52%)
3 Port problems	11 (10.28%)	4 (14.81%)
Port disconnection	6	2
Port infection	3	2
Port pain	1	0
Port dislocation	1	0
4 Pouch dilation	13 (12.15%)	2 (7.41%)
5 Band leakage	10 (9.35%)	2 (7.41%)
6 Band migration	8 (7.48%)	1 (3.70%)
7 Incisional hernia	7 (6.54%)	0
8 Band infection	2 (1.87%)	0
9 Gastric bleeding	1 (0.93%)	0
10 Gastric perforation–Pouch necrosis	1 (0.93%)	0
11 Wound infection	1 (0.93%)	0
Total complications	99 (51.40%)	22 (37.04%)

n number of complications, (% of complications)

published studies [15–18]. No significant difference was found for mean BMI and change in body weight between the Groups 50 or 60, but there was a significant better % EWL in *Group 50* ($p<0.05$) after 5 years following surgery. One of the major features of laparoscopic adjustable gastric banding is its safety. By the present analysis, when performing SAGB, the overall mortality was 0%. Laparoscopic adjustable gastric banding was the first minimally invasive procedure for morbid obesity. As such, and because of its apparent simplicity, it contributed significantly to the boom of bariatric surgery during the second part of the 1990s. LAGB has rapidly reached wide diffusion, giving the label of bariatric surgeon to any laparoscopic surgeon able to place a band around the stomach of an obese patient. However, with time, this procedure proved not to be the panacea that one would have thought it to be after its introduction [19]. In *Group 50* with 107 patients, there were 55 patients with 99 complications (51.4%), and in *Group 60* with 27 patients, there were ten patients with 22 complications (37.04%). In *Group 50*, 35.51% of the patients needed a reoperation, and in *Group 60*, 29.63% of the patients needed a reoperation. Postoperative complications and reoperations were significantly less frequent in *Group 60* ($p<0.05$). The most common complications were esophagitis (27%), esophageal dilation (16%), port problems (11%), pouch dilation (11%), band leakage (9%), and band migration (7%). We found that 54% of these complications were associated with esophagitis, esophageal dilation, and pouch dilation. This agrees with the literature, where a high incidence of long-

term gastroesophageal reflux disease and esophagitis is reported in patients after LAGB [20–22]. During long-term follow-up, the preoperative manometric data of esophageal body are rather predictive of the development of postoperative esophageal dilation in combination with esophageal status and aggravation or new onset of symptoms [23]. Patients who present with weak esophageal body motility before laparoscopic adjustable gastric banding are prone to end up with a dilated esophagus, often combined with pouch dilation and achalasia-like symptoms. Weakness of the esophagus is manometrically defined by simultaneous, interrupted, and low amplitude esophageal contraction waves. Obviously, a preoperatively adynamic esophageal body is unable to stay fully functional against the obstacle caused by the laparoscopic adjustable gastric banding and consequently results in loss of the esophageal capability to move correctly, but the body dilates and functionally collapses [24].

Conclusion

Surgery has been proven to be the most effective long-term treatment option for sustained weight loss and improvement in comorbidity in the morbidly obese. To reduce the high complication and reoperation rate after SAGB, preoperative esophageal manometry is a valuable instrument to identify weak esophageal body motility. In this case, sleeve gastrectomy or gastric bypass should be performed.

Table 2 Reoperations: Group 50 versus Group 60

Complication	Group 50 (<i>n</i> =107)	Group 60 (<i>n</i> =27)
Port problems	10 (9.35%)	4 (14.81%)
Port disconnection	6	2
Port infection	3	2
Port pain	1	0
Port dislocation	0	0
Band migration	8 (7.48%)	1 (3.70%)
Incisional hernia	7 (6.54%)	0
Band leakage	5 (4.67%)	2 (7.41%)
Pouch dilation	5 (4.67%)	1 (3.70%)
Band infection	1 (0.93%)	0
Wound infection	1 (0.93%)	0
Gastric perforation–Pouch necrosis	1 (0.93%)	0
Total reoperations	38 (35.51%)	8 (29.63%)

n number of reoperations, (% of reoperations)

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