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ORIGINAL CONTRIBUTIONS

One-Anastomosis Gastric Bypass: First 407 Patients in 1 year

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Abstract
Background One-anastomosis gastric bypass (OAGB) is a promising laparoscopic procedure with various benefits including shorter operating times and less operative complications. That said, it is yet to gain widespread acceptance. Here, we describe our first-year experience with OAGB in our department, in particular the safety and efficacy of this procedure.
Methods This study is a retrospective analysis of all patients who underwent OAGB between March 2015 and March 2016 by our bariatric surgery unit. Patient demographics, comorbidities, operative and postoperative data were collected and analyzed as well as outcomes during the first year.
Results Four hundred and seven patients underwent OAGB (254 females, average age 41.8 ± 12.05, BMI = 41.7 ± 5.77 kg/m^2). Ninety-eight patients (24%) had prior bariatric surgery. Ninety-four patients (23%) had diabetes, 93 patients (22.8%) had hypertension, 123 (28.8%) had hyperlipidemia, and 35 patients (8.6%) suffered from obstructive sleep apnea. Eight patients (1.96%) had early minor complications (Clavien-Dindo 1–3a), and 10 patients (2.45%) suffered early major complications (Clavien-Dindo ≥3b). The average length of hospital stay was 2.2 ± 0.84 days (range 2–10 days). Twenty patients (4.8%) were readmitted, and 10 patients underwent reoperation. Patients who had had previous bariatric surgery had higher rates of complications, a prolonged hospital admission, higher rates of readmission, and early reoperations. The average excess weight loss (%EWL) 1 year following surgery was 88.9 ± 27.3 and 72.8 ± 43.5% in patients that underwent primary and revision OAGB, respectively.
Conclusions OAGB is both safe and effective as a primary as well as a revision bariatric surgery.

Keywords Bariatric · Mini-gastric bypass · Sleeve gastrectomy · Obesity · BMI

Introduction

As obesity rates increase worldwide, bariatric surgeries continue to gain popularity. In an attempt to tackle this global epidemic, bariatric procedures have become an effective solution to this growing problem. A wide range of surgical procedures exist and there is much debate regarding the optimal approach with regard to safety and efficacy. The one-anastomosis gastric bypass (OAGB), also known as "mini-gastric bypass," was first described by Rutledge in 1997, demonstrating successful results on 1274 cases [1]. However, over the years since, OAGB remained a controversial procedure owing to concerns regarding symptomatic gastric or esophageal biliary reflux, often requiring revisional surgery as well as an increased risk of developing gastric and esophageal cancers [2–4]. Recently, more encouraging reports from over 7000 OAGB cases, performed in the last years, have highlighted the advantages of the OAGB method. These include fewer internal defects for herniation, ease of revision or reversal,

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and a shorter learning curve and have consequently led to the gradual reacceptance of this procedure [5–9].

Our bariatric surgery unit is highly experienced with major bariatric procedures, including laparoscopic sleeve gastrectomy (LSG), laparoscopic adjustable gastric banding (LAGB), and Roux-en-Y gastric bypass (RYGB). The purpose of this study was to report the early results and first-year experience in OAGB in our center. A cohort of 407 consecutive patients that underwent OAGB during a single year was retrospectively analyzed for early safety and efficacy.

Patients and Methods

Patients

Included in this study are 407 patients who underwent OAGB between March 2015 and March 2016. During the study period, another 503, 50, and 10 patients underwent LSG, RYGB, and LAGB, respectively, by the same surgical team. The indications for surgery comply with the guidelines of the American Society of Metabolic and Bariatric Surgery (ASMBS)—patients with a body mass index (BMI) ≥ 40 kg/m^2 or patients with a BMI ≥ 35 kg/m^2 and one or more obesity-related comorbidities. Decision regarding the type of bariatric procedure was made by the operating surgeon while taking the patient's preferences into account. Generally, OAGB was offered to obese patients with metabolic syndrome as a primary bariatric procedure, or as a revisional procedure. RYGB was offered to patients with metabolic syndrome and GERD, or as a revisional procedure. LSG was generally offered to the "healthy" obese. Demographic and clinical data consisting of patient's age, gender, BMI, and comorbidities including HTN, GERD, OSA, arthritis, HL, and DM, as well as past abdominal surgeries and bariatric surgeries, were all prospectively collected during the preoperative evaluations. Perioperative and postoperative data including postoperative both early (<30 days from surgery) and late (>30 days from surgery) complications, length of hospital stay, readmissions, reoperations, length of follow-up, and the percentage of excess weight lost (%EWL) were collected from follow-up notes, physicians' reports, and by telephone contact with the patients 3, 6, 9, and 12 months following surgery. We managed to follow up over 85% of the study population in each of the time frames. The percentage of excess weight loss (%EWL) was calculated by the standard formula (initial BMI − nadir BMI)/(initial BMI − 25) × 100%. Data were entered into a computer database that was maintained prospectively. Written informed consent was obtained from all patients before surgery. This study was approved by the institutional review board (IRB).

Surgical Technique and Postoperative Management

Our technique uses the following trocar placement: an 11-mm trocar above the umbilicus as a camera port and two 12-mm trocars in the right and left upper quadrants in the mid-clavicle line for staplers. In addition, two 5-mm trocars are placed in the right and left lateral subcostal position for liver retractor and a working port, respectively. The gastric pouch is created with a linear stapler (powered Echelon flex, 60-mm cartridges, Ethicon Endo Surgery) against a 34-French bougie. The gastroenterostomy is fashioned approximately 200 cm distal to the ligament of Treitz. The same linear stapler is used for the gastrojejunal anastomosis. The anastomosis is closed by a continuous suture and a leak test is performed with 50 ml of methylene blue solution.

Patients were instructed to keep a liquid diet for the first 10 postoperative days. Multivitamins (B-12, folic acid, calcium, and vitamin D) were prescribed to all patients in addition to proton pump inhibitors and venous thromboembolism (VTE) prophylaxis. Patients were followed up in our outpatient department by a team of surgeons and dietitians. Complete blood tests were performed at 6 and 12 months postoperatively and yearly thereafter.

Statistical Analysis

Statistical analysis was performed using the IBM SPSS statistic data editor. Continuous data is expressed as median values with the corresponding standard deviation. Fischer test and chi-square test were used for categorical data, and the Student's t test was used for continuous data analysis. All P values were derived from two-tailed tests.

Results

Between March 2015 and March 2016, 407 patients underwent OAGB for morbid obesity. The mean age at surgery was 41.8 years (range 13–72 years; SD ±12.05). Two hundred fifty-four (62.4%) were female. Mean preoperative weight was 116 ± 22 kg, with average BMI of 41.7 ± 5.77 kg/m^2. Thirty-six patients were "super-obese" with preoperative BMI above 50 kg/m^2. Ninety-eight patients (24%) underwent prior bariatric surgeries (LAGB n = 56, 57.16%; LSG n = 27, 27.5%; silastic ring vertical gastroplasty (SRVG) n = 9, 9.18%; and both LAGB and LSG n = 6, 6.12%) (Table 1), and 309 patients (76%) underwent primary OAGB. The average time from previous bariatric surgery was 8.8 ± 5.6 years. The indications for revisional OAGB are summarized in Table 1. Patient characteristics and preoperative data are summarized in Table 1. Patients who underwent revisional OABG were more likely to be "super-obese" and also had a higher incidence of GERD, HL, and DM compared

Table 1 Patient characteristics and preoperative data

	Total 407	Primary OAGB 309 (76%)	Revisional OAGB 98 (24%)	*P*
Gender—m/f (ratio)	153/254 (1.6)	125/184 (1.4)	28/70 (2.5)	0.35
Age (mean ± SD)	41.8 ± 12.05	41.2 ± 12.6	43.5 ± 9.7	0.053
BMI (mean ± SD)	41.7 ± 5.77	41.5 ± 4.6	42.2 ± 8.3	0.3
BMI > 50	36	20 (6.4%)	16 (16.3%)	0.004
Previous bariatric proc.				
LAGB	56	–	56 (57.16%)	–
LSG	27	–	27 (27.5%)	–
SRVG	9	–	9 (9.18%)	–
LAGB + LSG	6	–	6 (6.12%)	–
Indication for revision				
Weight loss failure	86 (21.1%)	–	86 (87.7%)	–
Dysphagia	7 (1.7%)	–	7 (7.14%)	–
Abdominal pain/dyspepsia	5 (1.22%)	–	5 (5.1%)	–
Comorbidities				
HTN—*n* (%)	93 (22.8%)	72 (23.3%)	21 (21.4%)	0.77
GERD—*n* (%)	25 (6.1%)	16 (5.1%)	9 (9.1%)	0.006
OSA—*n* (%)	35 (8.6%)	28 (9%)	7 (7.1%)	0.22
Arthritis	19 (4.6%)	15 (4.8%)	4 (4%)	0.35
HL—*n* (%)	123 (28.8%)	106 (34.3%)	17 (17.3%)	0.01
DM—*n* (%)	94 (23%)	81 (26.2%)	13 (13.2%)	0.003
HbA1c (g%)	8.64 ± 1.94	8.7 ± 2	8.14 ± 1.3	0.5

BMI body mass index, *LAGB* laparoscopic adjustable gastric bending, *LSG* laparoscopic sleeve gastrectomy, *SRVG* silastic ring vertical gastroplasty, *HTN* hypertension, *GERD* gastroesophageal reflux disease, *OSA* obstructive sleep apnea, *HL* hyperlipidemia, *DM* diabetes mellitus

to patients in whom OAGB was performed as the primary bariatric procedure (Table 1).

The majority of patients (74%) underwent only OAGB (Table 2). Nevertheless, a substantial proportion of the patients had a combined procedure that also included resection of the gallbladder or a removal of gastric band or repair of a diaphragmatic hernia. In some cases, the procedure included removal of LAGB and repair of diaphragmatic hernia or a cholecystectomy (Table 2).

Postoperative complications are summarized in Table 3. All operations were performed by laparoscopy and no conversions to an open approach were indicated. None of the patients died during the first year following surgery. Overall, 18 patients (4.4%) suffered from early postoperative complications (within 30 days from surgery) consisting of leak from anastomosis, postoperative bleeding, and early obstruction. Eight patients (1.96%) suffered from complications that were classified as minor (Clavien-Dindo 1–3a), and 10 patients had major complications (2.45%) (Clavien-Dindo ≥3b) (Table 3). Increased rates of anastomosis leak were demonstrated in patients that underwent OAGB as a revisional procedure compared to those who underwent a primary

Table 2 Type of operation

	Total 407 *n* (%)	Primary OAGB 309 (76%), *n* (%)	Revisional OAGB 98 (24%), *n* (%)	*P*
OAGB only	303 (74.4%)	259 (83.8%)	44 (44.9%)	<0.0001
OAGB + cholecystectomy	22 (5.4%)	17 (5.5%)	5 (5.1%)	0.72
OAGB + removal of GB	41 (10%)	–	41 (41.8%)	–
OAGB + diaphragmatic hernia repair	33 (8.1%)	33 (10.6%)	–	–
OAGB + removal of GB + diaphragmatic hernia repair	3 (0.73%)	–	3 (3.06%)	–
OAGB + removal of GB + cholecystectomy	5 (1.2%)	–	5 (5.1%)	–

GB gastric band

Table 3 Postoperative complications of OAGB

	Total 407	Primary OAGB 309 (76%)	Revisional OAGB 98 (24%)	*P*
Total early complications (<30 days) (*n*, %)	18 (4.4%)	10 (3.2%)	8 (8.16%)	<0.0001
Clavien-Dindo 1–3a (*n*, %)	8 (1.96%)	5 (1.6%)	3 (0.9%)	0.004
Anastomosis leak (*n*, %)	3 (0.73%)	1 (0.3%)	2 (2.04%)	<0.0001
Bleeding (*n*, %)	4 (0.98%)	3 (0.9%)	1 (1.02%)	0.71
Obstruction (*n*, %)	1 (0.24%)	1 (0.3%)	–	–
Clavien-Dindo ≥3b (*n*, %)	10 (2.4%)	5 (1.6%)	5 (5.1%)	<0.0001
Anastomosis leak (*n*, %)	4 (0.98%)	–	4 (4.08%)	–
Bleeding (*n*, %)	4 (0.98%)	3 (0.9%)	1 (1.02%)	0.71
Obstruction (*n*, %)	2 (0.49%)	2 (0.6%)	–	–
Early reoperation (<30 day) (*n*, %)	5 (1.2%)	1 (0.3%)	4 (4.08%)	<0.0001
Anastomosis leak (*n*, %)	4 (0.98%)	1 (0.3%)	3 (3.06%)	<0.0001
Bleeding (*n*, %)	1 (0.24%)	–	1 (1.02%)	–
LOS—days (mean, range)	2.2 (2–10)	2.15 (2–10)	2.44 (2–8)	0.002
LOS of complicated patients (mean days, range)	4.95 (3–10)	4.76 (3–10)	5.22 (4–8)	0.55
Patients discharged by POD2 (*n*, %)	360 (88.4%)	282 (91.2%)	78 (79.5%)	<0.0001
Total late complication (>30 days) (*n*, %)	8 (1.96%)	7 (2.1%)	1 (1.02%)	<0.0001
Clavien-Dindo 1–3a (*n*, %)	3 (0.72%)	2 (0.6%)	–	–
Dysphagia (*n*, %)	2 (0.49%)	2 (0.6%)	–	–
Cholecystitis (*n*, %)	1 (0.24%)	1 (0.3%)	–	–
Clavien-Dindo ≥3b (*n*, %)	5 (1.2%)	4 (1.2%)	1 (1.02%)	0.03
Obstruction (*n*, %)	5 (1.2%)	4 (1.2%)	1 (1.02%)	0.03
Late reoperation due to obstruction (*n*, %)	5 (1.2%)	4 (1.2%)	1 (1.02%)	0.03
Total readmission (*n*, %)	20 (4.8%)	13 (4.2%)	7 (7.14%)	0.001
Early readmission (<30 days) (*n*, %)	11 (2.7%)	6 (1.9%)	5 (5.1%)	<0.0001
Time to early readmission (mean days, range)	13 (4–26)	16.8 (5–26)	8.8 (4–19)	0.11
Anastomosis leak (*n*, %)	6 (1.4%)	2 (0.6%)	4 (4.08%)	0.001
Intestinal obstruction (*n*, %)	3 (0.7%)	3 (0.9%)	–	–
Hematoma (*n*, %)	2 (0.09%)	1 (0.3%)	1 (1.02%)	<0.0001
Late readmission (*n*, %)	8 (1.96%)	6 (1.8%)	2 (2.04%)	0.5
Time to late readmission (mean days, range)	170 (45–417)	182 (52–417)	127.5 (45–210)	0.283
Dysphagia (*n*, %)	2 (0.49%)	2 (0.6%)	–	–
Obstruction (*n*, %)	5 (1.2%)	4 (1.2%)	1 (1.02%)	0.7
Cholecystitis (*n*, %)	1 (0.24%)	1 (0.3%)	–	–

LOS length of stay, *POD* postoperative day, *NS* non-specific

OAGB (Table 3). Four patients who underwent revisional OAGB underwent an early reoperation. The indication for reoperation was leak from anastomosis in three patients, and postoperative bleeding in one patient (Table 3). One patient underwent early reoperation following a primary OAGB, due to anastomosis leak (Table 3). Mean time to early reoperation was 11.8 days (range 3–18). The mean length of hospital stay was 2.2 days (range 2–10) for the whole cohort, and 360 patients (88%) were discharged by postoperative day (POD) 2 (Table 3). The length of stay was significantly shorter, and rate of discharge on POD2 was significantly higher in patients that underwent primary surgery compared to those who underwent a revisional OAGB (Table 3). A total of 20 patients (4.8%) were readmitted following surgery, 11 of those within 30 days from surgery, mostly following a revisional OAGB (Table 3). The mean time to early readmission was 13 days (range 4–26) (Table 3). Indications for early readmission included anastomosis leak in six patients, obstruction in three patients, and hematoma in two patients (Table 3). Higher rates of readmission due to anastomosis leak and bleeding were demonstrated in patients that underwent revisional OAGB. However, all that were readmitted due to obstruction

underwent a primary OAGB (Table 3). Eight patients suffered from late postoperative complications (occurring over 30 days from surgery), most of which underwent a primary OAGB (Table 3). Minor late complications consisted of dysphagia in two patients, and cholecystitis in one patient (Table 3). Five patients, four following a primary OAGB and one following a revisional OAGB, suffered from major postoperative complications consisting of intestinal obstruction. These patients were eventually reoperated (Table 3). The indications for late readmissions corresponded to the mentioned late complications. The mean time to late readmission was 170 days (range 45–417) (Table 3).

Characterization and management of patients with leak from anastomosis are described in Table 4. In a total of seven patients, a leak from anastomosis was identified, all within 30 days from surgery (Table 4). Of these, five were following a revisional OAGB. The mean time to diagnosis was 6.5 days (range 2–14). In three patients, a conservative treatment consisting of fasting and intravenous antibiotics was sufficient, but four patients eventually underwent a reoperation in which a laparoscopic drainage of an intra-abdominal abscess was performed. The mean length of stay of patients with leak from anastomosis was 12 days (range 4–26). None of our patients demonstrated signs of bile reflux, including complaints of heartburn or hoarseness, during the first year following surgery. The %EWL 3, 6, 9, and 12 months following surgery was 48.8, 69.8, 78.2, and 85.1%, respectively (Table 5). Higher %EWL was demonstrated in patients who underwent primary OAGB compared to those following a revisional surgery in all time points (Table 5).

Discussion

The global obesity epidemic, with its associated complications and impact on morbidity and mortality, is one of the greatest health challenges of our generation [10, 11]. Although bariatric surgeries currently provide the most effective approach for %EWL, amelioration of comorbidities, improvement of quality of life, and lengthening of life span, they are still underperformed, mainly due to fears of postoperative complications. That said, there has been an increasing demand for bariatric surgery and the field is gaining popularity such that there are now a range of procedures and surgical techniques available. Surgical approaches range from simple restrictive techniques to radical operations that profoundly alter the gastrointestinal structure and function [12]. The RYGB, comprising both restrictive and malabsorptive elements, is considered the "gold standard" and was once performed as the surgery of choice in many centers [13, 14]. However, its significant morbidity rates and steep learning curve prompted the development of simpler and safer solutions with comparable efficacy [15, 16]. OAGB conceptually offers the same benefits of RYGB with several advantages. These include a single anastomosis, a shorter learning curve, fewer internal defects predisposing to herniation, and an easier route for revision or reversal [3, 7, 9]. Our team has gained experience in LAGB and LSG, as well as RYGB [17–19], but in the recent years, the surgery of choice in our service has been LSG. Here, we report our first-year experience with OAGB, performed by the same surgical teams in three different locations, as described in the "Patients and Methods" section. Being among the busiest bariatric units in the country, we were able to report the early results of over 400 cases in a single year.

Our series support the good early postoperative results of OAGB with no mortality, and a low rate of both minor and major postoperative complications [5, 6, 9, 20]. Over 88% of our patients were discharged on POD2, and only 24 patients (5.8%) that had no postoperative complications were discharged on POD3/4. This correlates with previously published data and corroborates the notion that if no complications necessitating intervention occur, the in-house recovery from OAGB is usually speedy and uneventful. Our early postoperative complications consisted of anastomosis leak, bleeding, and obstruction. None of our patients developed a deep vein thrombosis or pulmonary embolism. There were no other cases of

Table 4 Characteristics and management of patients with leak of anastomosis

Patient no.	Previous bariatric procedure	Time from OAGB to leak identification (days)	Clavien-Dindo	Management	Length of stay
1	LAGB	5	II	NPO and IVABx	12
2	LAGB	2	II	NPO and IVABx	12
3	–	5	II	NPO and IVABx	4
4	LAGB + LSG	6	IVa	Lap drainage following failed percutaneous drainage	26
5	LAGB + LSG	10	IVa	Lap drainage	13
6	LAGB	4	IVa	Lap drainage	17
7	–	14	IVa	Lap drainage	15

NPO nothing per os, *IVABx* intravenous antibiotics, *Lap* laparoscopic

Table 5 %EWL and %TWL 3, 6, 9, and 12 months following surgery

	3 months		6 months		9 months		12 months	
	%EWL	%TWL	%EWL	%TWL	%EWL	%TWL	%EWL	%TWL
All patients	48.8 ± 25.3	18.4 ± 8.9	69.8 ± 18.7	37.6 ± 10.4	78.2 ± 30.8	31.1 ± 7.7	85.1 ± 32	33.6 ± 7.8
Primary OAGB (n = 309)	50.7 ± 25.0	19.4 ± 9.4	72.9 ± 17.9	39.5 ± 8.7	80.9 ± 29.9	33.1 ± 6.2	88.9 ± 27.3	36.3 ± 5.6
Revisional OAGB (n = 98)	42.3 ± 25.4	15.2 ± 7.3	59.4 ± 19.6	27.8 ± 10.4	69.3 ± 33.7	24.8 ± 8.5	72.8 ± 43.5	27.8 ± 10.4
Prior LSG (n = 27)	51.2 ± 29.6	17.2 ± 8.1	66.0 ± 21.3	22.2 ± 9.1	107.1 ± 59.7	24.4 ± 12.9	90.1 ± 63.9	23.6 ± 12.0
Prior LAGB (n = 56)	37.5 ± 20.5	14.1 ± 6.6	56.6 ± 16.6	22.3 ± 8.4	73.5 ± 18.4	25.1 ± 6.9	82.6 ± 34.7	31.3 ± 8.8
Prior SRVG (n = 9)	66.6 ± 36.6	20.2 ± 5.6	–	–	95.4 ± 13.9	29.19 ± 9.3	135.6 ± 52.7	30.9 ± 6.5
Prior LAGB and LSG (n = 6)	28.5 ± 17.2	12.5 ± 8.7	–	–	47.5 ± 30.5	22.0 ± 6.1	68.0 ± 2.2	24.0 ± 4.2
P	0.01		<0.001		0.06		0.01	

P represents statistical significance of the difference between primary OAGB and revisional OAGB

EWL estimated weight loss, *TWL* total weight loss

postoperative complications that necessitated intervention, i.e., a marginal ulcer formation, urinary tract infection, pneumonia, or wound infection. Our main major postoperative complications consisted of anastomosis leak and bleeding in four patients each, followed by proximal obstruction in two.

Reoperation within 30 days from surgery was performed for patients with anastomosis leaks (with Clavien-Dindo ≥3b), and one patient due to bleeding, but no patients with early obstruction required surgery. These patients were treated successfully by endoscopic dilatations. Nevertheless, we had five late reoperations (average 160 days following surgery) due to intestinal obstruction. In these patients, no signs of obstruction due to internal or trocar site hernias were noticed; they were attributed to either a kink in the vicinity of the anastomosis or a simple adhesions. These were treated with enteropexy and adhesiolysis, respectively. The rate of intestinal obstructions occurring within 1 year from surgery is higher than was previously reported. A possible reason may be the fact that four patients out of the five of the patients who suffered from intestinal obstruction had previously undergone other non-bariatric abdominal surgeries.

Approximately a quarter of our cohort had had a previous bariatric operation. This enabled us to compare the results of this unique group to those of patients who underwent primary OAGB. The fact that most of these patients underwent revisional surgery due to weight loss failure may suggest low compliance. This group had higher rates of "super-obesity" and comorbidities, including GERD, HL, and DM. They suffered from higher rates of both minor and major postoperative complications, prolonged length of hospital stay, and higher rates of both readmissions and reoperations. This is somewhat expected as surgeries in patients who have had previous abdominal operations are more challenging and associated with higher rates of complications [21–23]. Moreover, over 40% of the patients that underwent revisional OAGB had a concomitant removal of LAGB, adding an additional source for postoperative complications. The significant difference in %EWL that was noticed between the groups

Table 6 Comparison of the presented results with selected large series

	This study	Parmer et al.	Carbajo et al.	Chevallier et al.	Musella et al.
No. of patients	407	125	1200	1000	974
Conversion to open approach	–	–	4 (0.3%)	–	12 (1.2%)
Readmissions	20 (4.8%)	7 (5.6%)	23 (1.9%)	NS	–
Leaks	7 (1.7%)	–	12 (1%)	6 (0.6%)	10 (1%)
Major early complications	10 (2.4%)	2 (1.6%)	32 (2.7%)	35 (3.5%)[b]	54 (5.5%)
Major late complications	5 (1.2%)	3 (2.4%)	12 (1%)	20 (2%)[b]	74 (9.0%)
Early reoperations	5 (1.2%)	1 (0.8%)	16 (1.3%)	16 (1.6%)	20 (2%)
Late reoperations	5 (1.2%)	3 (2.4%)	1 (0.08%)	14 (1.4%)	7 (0.8%)
Mortality	–	–	2 (0.16%)	2 (0.2%)	2 (0.2%)
1 year %EWL	85.1 ± 32	79.5%	77%[a]	71%	70.1%

NS not specified

[a] 77% after 6 years

[b] Major and minor complications

3, 6, and 12 months following surgery may also reflect an inherent difference in compliance. Despite that, both the revisional and primary patient groups demonstrated an impressive decrease in EWL, reaching and surpassing 70%, as early as 9 months following surgery. The results presented in this study stand are in good agreement to other large series publications [5, 6, 9, 20] (Table 6).

Overall, this study demonstrates that OAGB is an effective surgical method of weight reduction, with over 70% EWL within 9 months. This study also shows that the OAGB is a safe procedure associated with a complication rate that is low and complications that are easily manageable. Another advantage is the relative technical simplicity associated with this procedure, which would allow for a smooth transition and short learning curve for surgeons experienced in other bariatric procedures. This is the first study from our country that thoroughly investigates the early efficacy in terms of weight reduction and associated complications of this reemerging surgical procedure. Among the strengths of our study are our relatively large cohort of patients and the extensive data collected regarding the postoperative complications within the first year. Furthermore, we were able to compare efficacy and complication rates between patients that underwent OAGB as their primary bariatric procedure and patients who had OAGB as a revisional surgery. Study limitations include its retrospective nature, relatively short follow-up period, and the lack of sufficient data regarding comorbidity resolution. Longer follow-up period with proper randomization is needed before OAGB is to become the gold standard of bariatric surgeries.

Compliance with Ethical Standards All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Conflict of Interest The authors declare that they have no conflict of interest.

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