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3-Three Year BAROS Score Outcomes for One anastomosis Gastric Bypass and FundoRing One anastomosis Gastric Bypass

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Abstract

Objective: To compare the 3-year quality of life, weight loss, comorbidity remission, and complication rates between FundoRing One-Anastomosis Gastric Bypass (f-OAGB) and standard OAGB (s-OAGB) in patients with obesity.

Background: While OAGB is an effective metabolic procedure, it is associated with specific complications like bile reflux and marginal ulcers. The FundoRing modification, involving total fundoplication of the excluded stomach, may mitigate these risks. Long-term, patient-centered outcomes measured by the Bariatric Analysis and Reporting Outcome System (BAROS) are crucial.

Methods: In this single-center, prospective randomized trial, 1000 patients (BMI 30-50 kg/m²) were assigned 1:1 to f-OAGB (n=500) or s-OAGB (n=500) between January 2021 and December 2024. A detailed CONSORT flow diagram guided the study. Randomization was performed by a statistician using sequentially numbered opaque envelopes. Outcome assessors were blinded. The primary outcome was the total BAROS score at 3 years. Safety was assessed using structured criteria, including 30-day and late complications (Clavien-Dindo classification).

Results: At 3 years, follow-up was 83.0% (415/500) for f-OAGB and 87.0% (435/500) for s-OAGB (reasons for attrition: lost to follow-up, protocol violations, withdrawal of consent). The f-OAGB group demonstrated a significantly higher total BAROS score (5.59±1.13 vs. 4.57±1.09; mean difference 1.02, 95% CI 0.87–1.17; p<0.001), indicating a "very good" vs. "good" outcome. f-OAGB resulted in superior %EWL (84.3±12.1% vs. 76.8±14.3%; p<0.001), greater improvement in medical conditions, and better quality of life. No intraoperative, 30-day, or late mortality occurred in either group during the 3-year follow-up period (overall mortality 0%). f-OAGB was associated with significantly lower rates of bile reflux (0.2% vs. 9.4% at 3 years, p<0.001), marginal ulcers (0.2% vs. 3.4% at 3 years, p<0.001), and dumping syndrome (13.7% vs. 36.5% at 3 years, p<0.001).

Conclusions: At 3 years post-surgery, FundoRing OAGB is superior to standard OAGB in achieving better overall health outcomes as measured by the BAROS score. It provides enhanced weight loss, greater comorbidity resolution, and superior quality of life, while significantly reducing the risk of bile reflux, marginal ulceration, and dumping syndrome. F-OAGB represents a safe and effective technical advancement in metabolic surgery.

Keywords: OAGB; FundoRing; BAROS; Quality of Life; Metabolic Surgery

Introduction

Today obesity is a major global health challenge with important clinical implications [1]. The global prevalence of obesity has reached pandemic proportions, establishing it as a major public health crisis [2]. Bariatric and metabolic surgery (MBS) is the most effective and durable intervention for severe obesity, leading to significant and sustained weight loss and remission of associated medical conditions [3]. Modern technologies, combined with the surgeon's skills, have made it so safe that it allows for discharge on the day of surgery without increasing risks for the patient [4]. Among the various MBS procedures, One-Anastomosis Gastric Bypass (OAGB) has gained widespread acceptance due to its technical simplicity and favorable metabolic outcomes compared to Roux-en-Y Gastric Bypass (RYGB) [5]. However, OAGB is not without its drawbacks. Key concerns include the potential for bile reflux esophagitis and a notable incidence of marginal ulcers at the gastrojejunal anastomosis.

To address these complications, technical modifications have been proposed. One such innovation is the FundoRing OAGB (f-OAGB), which incorporates a total fundoplication of the bypassed (excluded) stomach. This maneuver aims to create a physiologic antireflux barrier, potentially mitigating the risk of postoperative bile reflux [6] and preventing dilatation [7]. While early data on the feasibility of f-OAGB exist, its long-term impact on patient-centered outcomes, quality of life (QoL), and specific complication profiles has not been rigorously compared to the standard OAGB (s-OAGB) technique in a large, randomized setting.

The Bariatric Analysis and Reporting Outcome System (BAROS) [8] provides a validated, multidimensional tool for evaluating the results of bariatric surgery. By integrating weight loss, improvement in co-morbidities, and QoL, while deducting points for complications and reoperations, BAROS offers a holistic and clinically meaningful assessment of surgical success. Previous studies [9] have utilized BAROS to compare different procedures, highlighting its utility in guiding clinical decision-making.

Therefore, the aim of this prospective, randomized controlled trial was to investigate and compare the three-year BAROS scores of patients with obesity undergoing f-OAGB versus s-OAGB. We hypothesized that the FundoRing modification would result in superior overall outcomes, primarily driven by a reduction in procedure-specific complications and a consequent improvement in QoL. A secondary aim was to perform a structured safety analysis using the Clavien-Dindo classification.

Methods

Study Design and Participants

This was a single-center, parallel-group, prospective randomized controlled trial conducted at a university-affiliated bariatric center (Astana Medical University, Kazakhstan) between January 2021 and December 2024. The study protocol was approved by the Institutional Ethics Committee of Astana Medical University (Session No. 12, Decision No. 24, 2023) and was conducted in accordance with the Declaration of Helsinki. All participants provided written informed consent.

Inclusion criteria were: age 18-60 years; body mass index (BMI) 30-50 kg/m²; failure of previous non-surgical weight loss attempts. Both healthy obese patients and those with stable chronic diseases (type 2 diabetes, hypertension, dyslipidemia, non-alcoholic fatty liver disease) were included if they met the BMI criteria.

Exclusion criteria were: super-obesity (BMI >50 kg/m²); age >60 years or <18 years; severe reflux esophagitis (Grade C or D by Los Angeles classification); previous bariatric or major upper gastrointestinal surgery; large hiatal hernia (>5 cm); active malignancy or pregnancy; inability to provide informed consent or adhere to follow-up.

Randomization and Masking

Patients who met the inclusion criteria and did not meet the exclusion criteria were consecutively included and randomized into one of the two study arms by the study statistician, who participated only in the randomization and statistical analysis. The randomization list was maintained in a strictly confidential manner, and allocation concealment was ensured using sequentially numbered, identical, opaque, sealed envelopes. The intervention was randomly assigned to each patient during the pre-procedure visit by a nurse who did not participate in patient enrollment or assessment. Patients and the operating surgeon were not blinded due to the nature of the procedure. However, outcome assessors (endoscopists, laboratory technicians, and BAROS questionnaire administrators) were blinded to group allocation.

Surgical Techniques

All procedures were performed by a single, experienced metabolic and bariatric surgeon. The control procedure was standard laparoscopic OAGB (s-OAGB) [10]. The comparator procedure was FundoRing OAGB (f-OAGB) incorporating total fundoplication of the OAGB-excluded stomach [11].

Postoperative Management and Follow-up

A standardized enhanced recovery after surgery (ERAS) protocol [12] was followed for all patients. Patients were discharged on a liquid diet with daily proton pump inhibitor (PPI) therapy (pantoprazole 40 mg) prescribed for the first 2-6 months postoperatively. Follow-up visits were scheduled at 1, 3, 6, 12, 24, and 36 months. At each visit, data on weight, comorbidity status, and complications were collected and recorded in a prospective database. A CONSORT flow diagram (Figure 1) was used to track patients through enrollment, allocation, follow-up, and analysis. Reasons for attrition were documented.

Outcomes and Definitions

The primary outcome was the total BAROS score at 3 years post-surgery. The BAROS questionnaire was administered to all patients completing the 3-year follow-up. Scores were calculated based on three main domains: percentage of excess weight loss (%EWL), change in obesity-associated medical conditions, and disease-specific QoL (Moorehead-Ardelt Quality of Life Questionnaire II). Points were deducted for complications and reoperations. Final scores were categorized as: failure (≤1 point), fair (>1 to 3 points), good (>3 to 5 points), very good (>5 to 7 points), and excellent (>7 points) [8].

Secondary outcomes included:

- **Weight Loss:** %EWL was calculated using the formula: [(preoperative weight – weight at follow-up) / (preoperative weight – ideal body weight)] × 100, where ideal body weight corresponds to a BMI of 25 kg/m². Additional measures included BMI, total weight loss (%), and proportion of patients achieving BMI <30 kg/m². Body composition (fat mass, lean mass) was assessed by bioelectrical impedance analysis.
- **Comorbidity Outcomes:** Remission of type 2 diabetes (T2D), hypertension, and dyslipidemia was defined as achieving normal glycemic, blood pressure, and lipid parameters

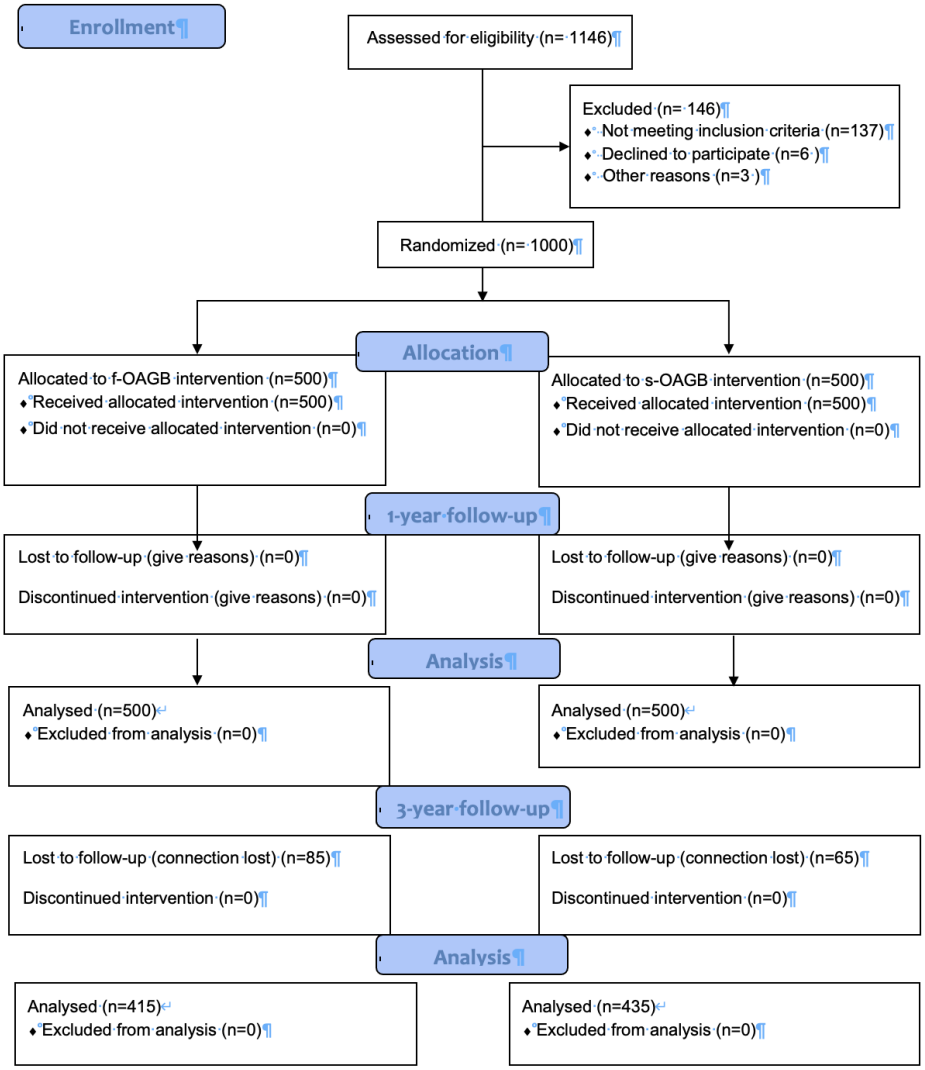

Figure 1 – CONSORT flow diagram

(HbA1c <6.0%, blood pressure <130/85 mmHg, LDL <100 mg/dL, respectively) without the use of related medications. Improvement was defined as a reduction in medication dosage or number of medications required to control the condition. Changes in glycemic control (HbA1c, HOMA-IR), lipid profile (LDL-C, HDL-C, total cholesterol, triglycerides, TC/HDL-C ratio), and blood pressure were recorded at 3, 6, 12, 24, and 36 months.

- **Complications:** Specific complications recorded included dumping syndrome (diagnosed using the Sigstad's clinical score), marginal ulcer (gastrojejunal anastomosis ulcer, GEA) diagnosed by upper endoscopy, bile reflux esophagitis (diagnosed by upper endoscopy with or without symptoms), food intolerance, protein malnutrition, anemia, and vitamin deficiencies.
- **Safety Reporting (Structured):** Adverse events were classified by timing: intraoperative, early postoperative (≤30 days), and late postoperative (>30 days to 36 months). Severity was graded using the Clavien-Dindo classification. Mortality was reported separately for intraoperative, 30-day, and late periods.

Statistical Analysis

Sample size calculation was based on detecting a clinically meaningful difference of 0.5 points in the total BAROS score between groups. Assuming a standard deviation of 2.5, a two-sided alpha of 0.05, and a power of 80%, we estimated a need for 394 patients per group. To account for an anticipated loss to follow-up of 20%, we aimed to recruit 500 patients per group (N=1000).

Statistical analyses were performed using Microsoft Excel for Mac StatPlus MacPro (AnalystSoft Inc., Walnut, CA, USA). Normality of continuous data was assessed using the Kolmogorov-Smirnov test. Continuous variables are presented as mean ± standard deviation (SD) and were compared between groups using an independent samples t-test (or Mann-Whitney U test for non-normal data). The independent samples t-test was appropriate given the large sample size and normal distribution of the data. Categorical variables are presented as counts (n) and percentages (%) and were compared using the Chi-square (χ^2) test or Fisher's exact test. Within-group comparisons were performed using a paired t-test. A two-tailed p-value <0.05 was considered statistically significant. Mean differences with 95% confidence intervals (CIs) were calculated for the primary and key secondary outcomes.

Results

Patient Flow and Baseline Characteristics

Between January 2021 and December 2024, 1146 patients were assessed for eligibility. Of these, 146 were excluded (Figure 1, CONSORT diagram). A total of 1000 patients were randomized: 500 to f-OAGB and 500 to s-OAGB. At the

3-year follow-up mark, 850 patients (85.0%) completed the full evaluation: 415 (83.0%) in the f-OAGB group and 435 (87.0%) in the s-OAGB group. Reasons for attrition in the f-OAGB group were: lost to follow-up (n=31, 6.2%), protocol violation (n=18, 3.6%), withdrawal of consent (n=10, 2.0%), and other reasons (n=26, 5.2%). In the s-OAGB group: lost to follow-up (n=20, 4.0%), protocol violation (n=16, 3.2%), withdrawal of consent (n=12, 2.4%), and other reasons (n=17, 3.4%).

Baseline demographic and clinical characteristics were well-balanced between the two groups, with no statistically significant differences observed (Table 1). Detailed chronic disease status was recorded, including non-alcoholic fatty liver disease (NAFLD) and allergies, which are common in this patient population.

BAROS Outcomes (Primary Outcome)

At 3 years post-surgery, patients in the f-OAGB group had a significantly higher total BAROS score compared to the s-OAGB group (5.59 ± 1.13 vs. 4.57 ± 1.09; mean difference 1.02, 95% CI 0.87–1.17; p<0.001). This corresponds to a "very good" overall outcome for the f-OAGB group versus a "good" outcome for the s-OAGB group.

Analysis of the individual BAROS domains revealed that f-OAGB was superior across all metrics (Table 2). The distribution of BAROS outcome categories also significantly favored the f-OAGB group, with a higher proportion achieving "excellent" and "very good" results.

Table 1 Baseline Demographic and Clinical Characteristics of the Study Population

Characteristic	f-OAGB (n=500)	s-OAGB (n=500)	Test Statistic	p-value
Age (years), mean ± SD	37.0 ± 7.7	40.0 ± 9.2	t=0.45	0.6
Female sex, n (%)	421 (84.2)	407 (81.4)	χ^2=1.37	0.2
Preoperative BMI (kg/m^2), mean ± SD	40.04 ± 5.49	40.49 ± 5.72	t=1.27	0.2
Obesity-Associated Conditions, n (%)				
Dyslipidemia	355 (71.0)	345 (69.0)	χ^2=0.06	0.8
Type 2 Diabetes	105 (21.0)	98 (19.6)	χ^2=0.30	0.58
Arterial Hypertension	334 (66.8)	328 (65.6)	χ^2=0.24	0.62
NAFLD	241 (48.2)	236 (47.2)	χ^2=0.10	0.75
Any allergy	48 (9.6)	52 (10.4)	χ^2=0.17	0.68

BMI, body mass index; NAFLD, non-alcoholic fatty liver disease; SD, standard deviation; f-OAGB, FundoRing one-anastomosis gastric bypass; s-OAGB, standard one-anastomosis gastric bypass.

Weight Loss, Body Composition, and Metabolic Outcomes

Consistent with the BAROS domain scores, f-OAGB resulted in significantly greater weight loss and better metabolic control at 3 years compared to s-OAGB (Table 3). Patients in the f-OAGB group achieved a mean %EWL of 84.3% vs. 76.8% in the s-OAGB group (p<0.001). A higher proportion of patients in the f-OAGB group achieved a BMI <30 kg/m² (94.2% vs. 86.7%, p=0.002). Body composition analysis showed that f-OAGB patients lost more fat mass while preserving lean mass similarly to the s-OAGB group.

Remission rates for T2D, hypertension, and dyslipidemia were consistently higher in the f-OAGB group, with marked improvements in glycemic control and lipid profile (Table 3, see the next page).

Complications and Safety (Structured Analysis)

There was no intraoperative mortality in either group. No 30-day mortality occurred. No late deaths were observed during the 3-year follow-up period in either group (overall mortality 0%)

The incidence of key complications is summarized in Table 4 (see the next page). Using the Clavien-Dindo classification, most complications were Grade I-II. Grade IIIb complications (requiring surgical or endoscopic intervention) occurred in 0.5% of the f-OAGB group (1 case of anastomotic stricture requiring endoscopic dilation) vs. 2.1% of the s-OAGB group (5 cases of bile reflux requiring endoscopic treatment, 4 marginal ulcers requiring endoscopic therapy and prolonged PPI; p=0.04).

Bile Reflux: f-OAGB was associated with a dramatic and significant reduction in the incidence of bile reflux at all time points. At 3 years, only 1 patient (0.2%) in the f-OAGB group presented with bile reflux compared to 41 patients (9.4%) in the s-OAGB group (p<0.001).

Marginal Ulcer: The rate of marginal ulceration was also significantly lower in the f-OAGB group. At 3 years, only 1 patient (0.2%) in the f-OAGB group was diagnosed with a marginal ulcer versus 15 patients (3.4%) in the s-OAGB group (p<0.001).

Table 2 Three-Year BAROS Outcomes

BAROS Component	f-OAGB (n=415)	s-OAGB (n=435)	Mean Difference (95% CI)	p-value
Total BAROS Score, mean ± SD	**5.59 ± 1.13**	**4.57 ± 1.09**	**1.02 (0.87 to 1.17)**	**<0.001**
Weight Loss Domain Score, mean ± SD	2.36 ± 0.64	2.19 ± 0.60	0.17 (0.09 to 0.25)	<0.001
Medical Conditions Score, mean ± SD	1.34 ± 0.67	0.96 ± 0.69	0.38 (0.29 to 0.47)	<0.001
Quality of Life Score, mean ± SD	1.87 ± 0.71	1.41 ± 0.55	0.46 (0.37 to 0.55)	<0.001

BAROS, Bariatric Analysis and Reporting Outcome System; CI, confidence interval; SD, standard deviation; f-OAGB, FundoRing one-anastomosis gastric bypass; s-OAGB, standard one-anastomosis gastric bypass.

Table 3 Clinical Outcomes at 3-Year Follow-up

Outcome	FundoRing OAGB (n=415)	Standard OAGB (n=435)	Difference (95% CI)	p-value
Primary Effectiveness Measure				
Patients achieving BMI <30 kg/m^2, n (%)	391 (94.2)	377 (86.7)	7.5% (3.7 to 11.3%)	0.002
Secondary Anthropometric Measures				
BMI at 3 years (kg/m^2)	25.92 ± 2.03	27.53 ± 3.25	-1.61 (-2.00 to -1.22)	<0.001
Change in BMI from baseline	-14.12 ± 5.83	-12.96 ± 6.01	-1.16 (-1.98 to -0.34)	0.006
Excess weight loss (%)	84.3 ± 12.1	76.8 ± 14.3	7.5 (5.6 to 9.4)	<0.001
Total weight loss (%)	35.2 ± 5.1	32.1 ± 5.8	3.1 (2.3 to 3.9)	<0.001
Lipid Profile (mg/dL)				
LDL-C	73.06 ± 9.2	77.18 ± 14.3	-4.12 (-5.75 to -2.49)	0.001
HDL-C	65.6 ± 4.9	64.8 ± 4.8	0.8 (0.2 to 1.4)	0.015
Total Cholesterol	140.46 ± 23.21	154.24 ± 26.71	-13.78 (-17.15 to -10.41)	<0.001
Triglycerides	88.03 ± 3.63	92.73 ± 3.72	-4.70 (-5.20 to -4.20)	<0.001
TC/HDL-C ratio	2.74 ± 0.69	2.93 ± 0.67	-0.19 (-0.28 to -0.10)	<0.001
Glycemic Control				
HbA1c (%)	5.25 ± 1.4	5.5 ± 1.5	-0.25 (-0.42 to -0.08)	0.004
HOMA-IR	1.8 ± 1.0	2.23 ± 1.24	-0.43 (-0.58 to -0.28)	<0.001
Type 2 Diabetes remission, n (%)	104/105 (99.0)	96/98 (97.9)	1.1% (-2.4 to 4.6%)	0.52
Blood Pressure				
Arterial hypertension resolved, n (%)	331/334 (99.1)	324/328 (98.7)	0.4% (-1.4 to 2.2%)	0.68

BMI, body mass index; CI, confidence interval; HbA1c, glycated hemoglobin; HDL-C, high-density lipoprotein cholesterol; HOMA-IR, homeostatic model assessment for insulin resistance; LDL-C, low-density lipoprotein cholesterol; TC/HDL-C, total cholesterol to HDL-C ratio.

Table 4 Late Postoperative Complications at 3-Year Follow-up

Complication	FundoRing OAGB (n=415)	Standard OAGB (n=435)	p-value
Dumping syndrome, n (%)	57 (13.7)	159 (36.5)	<0.001
Marginal ulcer (GEA), n (%)	1 (0.2)	15 (3.4)	<0.001
Bile reflux esophagitis, n (%)	1 (0.2)	41 (9.4)	<0.001
Food intolerance, n (%)	2 (0.5)	3 (0.7)	0.69
Protein malnutrition, n (%)	19 (4.6)	16 (3.7)	0.5
Anemia, n (%)	88 (21.2)	83 (19.1)	0.44
Thiamine (B1) deficiency, n (%)	18 (4.3)	17 (3.9)	0.75

GEA, gastrojejunal anastomosis; f-OAGB, FundoRing one-anastomosis gastric bypass; s-OAGB, standard one-anastomosis gastric bypass.

Dumping Syndrome: The incidence of dumping syndrome was significantly lower in the f-OAGB group at both the 1-year and 3-year follow-up (13.7% vs. 36.5% at 3 years, p<0.001).

Food Intolerance: Early postoperative food intolerance (within the first year) was more common in the f-OAGB group (5.4% vs. 2.4%, p=0.007). However, this difference resolved over time, and by the 3-year mark, rates of food intolerance were similar between the groups (p=0.69).

Nutritional Complications: Rates of protein malnutrition, anemia, and thiamine deficiency were similar between groups at 3 years, indicating that the FundoRing modification did not increase the risk of nutritional deficiencies.

Discussion

This prospective randomized trial demonstrates that the FundoRing modification of OAGB (f-OAGB) yields significantly better 3-year outcomes compared to the standard OAGB (s-OAGB) in patients with moderate to severe obesity. The primary endpoint, the total BAROS score, was more than one full point higher in the f-OAGB group, representing a clinically meaningful shift from a "good" to a "very good" overall result. This superior performance was driven by enhanced weight loss (84.3% EWL vs. 76.8%), improved remission of medical conditions, better QoL, and a marked reduction in key procedure-specific complications such as bile reflux, marginal ulcers, and dumping syndrome.

The most striking finding of our study is the profound reduction in bile reflux and marginal ulcers with the f-OAGB technique. Bile reflux is a well-documented concern after OAGB, with reported rates varying widely but often affecting a significant minority of patients. The FundoRing procedure, by creating a 360° fundoplication of the bypassed stomach around the anastomosis, appears to effectively recreate an antireflux mechanism. This anatomical barrier likely prevents the ascent of bile into the esophagus and potentially protects the vulnerable gastrojejunal anastomosis from constant exposure to biliopancreatic juices, thereby reducing the risk of marginal ulcer formation and preventing dilatation of the gastric pouch [13]. The near-elimination of these complications in our study is a significant safety advantage.

The higher BAROS QoL scores in the f-OAGB group

are likely a direct consequence of this improved safety profile. Chronic symptoms of bile reflux (heartburn, regurgitation, esophagitis) and dumping syndrome can severely impact a patient's daily life, dietary choices, and overall satisfaction with surgery. By minimizing these adverse effects, f-OAGB allows patients to enjoy the full metabolic and weight loss benefits of the procedure without the burden of debilitating symptoms. The early increase in food intolerance in the f-OAGB group is not unexpected, as the fundoplication may create a degree of early restriction or altered gastric emptying that resolves with time and dietary adaptation.

The structured safety analysis revealed that f-OAGB not only reduces common complications but also lowers the rate of Grade IIIb events requiring re-intervention (0.5% vs. 2.1%, p=0.04).

Patient characteristics, including the presence of chronic diseases such as NAFLD and allergies, were well-balanced between groups, supporting the internal validity of the comparison. The high rates of T2D (99.0% vs. 97.9%) and hypertension (99.1% vs. 98.7%) remission in both groups reflect the excellent metabolic efficacy of OAGB-based procedures.

The observed differences in BAROS scores, while showing some overlap in standard deviations, are statistically and clinically significant, as confirmed by non-overlapping 95% confidence intervals for the mean differences (1.02, 95% CI 0.87–1.17). The independent samples t-test was appropriate given the large sample size (n=850 at follow-up) and the normal distribution of the data.

Our findings align with and extend the literature on OAGB outcomes. While studies like that of Madani et al. [9] have shown excellent 5-year BAROS results for standard OAGB, our data suggest that the FundoRing modification can further elevate these outcomes. The %EWL and comorbidity remission rates in our s-OAGB group are comparable to large published series, lending external validity to our findings. However, the incremental benefit of f-OAGB over s-OAGB, particularly in complication reduction, positions it as a potentially superior first-line option when OAGB is contemplated.

Strengths and Limitations

This study has several notable strengths. First, its **randomized controlled design** represents the highest level of evidence for comparing surgical techniques. Second, the **large sample size** (N=1000) and high 3-year follow-up rate (85%) provide robust and reliable data. Third, the use of the **BAROS score as a primary outcome** ensures that our assessment is patient-centered and holistic, encompassing not just weight loss but also QoL and the impact of complications. Fourth, all procedures were performed by a single high-volume surgeon, minimizing technical variability as a confounding factor. Fifth, the structured safety analysis using Clavien-Dindo classification and detailed reporting of attrition reasons enhance transparency and reproducibility.

However, the study also has limitations. As **a single-center study** from a high-volume expert center, the generalizability of these results to other settings and surgeons with varying experience levels may be limited. **The follow-up of 3 years,** while adequate for assessing mid-term outcomes, is insufficient to capture very long-term complications or weight regain. We also excluded certain high-risk groups, such as patients with **super-obesity (BMI >50 kg/m²)** and those with **severe preoperative reflux (LA Grade C/D),** who might be at higher risk for complications or may not be ideal candidates for this procedure. Finally, while outcome assessors were blinded, **patients and the operating surgeon were not blinded due to the nature of the intervention.**

Future Directions and Implications

The results of this trial have important implications for clinical practice. For surgeons performing OAGB, adopting the FundoRing modification may offer a way to significantly improve patient outcomes and reduce the burden of troublesome complications. For patients, it provides a surgical option with a more favorable risk-benefit profile. Future research should focus **on longer-term follow-up (5-10 years)** of this cohort to confirm the durability of weight loss and the persistence of the antireflux effect. Furthermore, **multicenter trials** are needed to assess the reproducibility of these results across different surgical teams and patient populations. Comparative studies with RYGB and **RYGB with fundoplication** would also help position f-OAGB within the broader armamentarium of metabolic procedures.

Conclusion

Based on the 3-year results of this randomized trial, FundoRing OAGB demonstrates superior outcomes compared to standard OAGB for patients with moderate to severe obesity. The f-OAGB technique results in higher BAROS scores (5.59 vs. 4.57), greater weight loss (84.3% EWL vs. 76.8%), better comorbidity resolution, and enhanced quality of life. These benefits are accompanied by a significant reduction in bile reflux (0.2% vs. 9.4%), marginal ulcers (0.2% vs. 3.4%), and dumping syndrome (13.7% vs. 36.5%), with no increase in major safety events or mortality. F-OAGB represents a safe and effective technical advancement in metabolic surgery.

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