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REVIEW

Primary and Revisional One Anastomosis Gastric Bypass: A Systematic Review and GRADE-Based IFSO Position Statement

Maurizio De Luca[1] · Amanda Belluzzi[1] · Matteo Monami[2] · Luigi Angrisani[3] · Miguel Angel Carbajo[4] · Nicola Di Lorenzo[5] · Jacques Himpens[6] · Mohammad Kermansaravi[7] · Giovanni Merola[8] · Giuseppe Navarra[9] · Abdelrahman Nimeri[10] · Tarissa B. Z. Petry[11] · Giacomo Piatto[12] · Scott Shikora[10] · Ricardo V. Cohen[11]

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Abstract
Obesity is a chronic, systemic disease that alters the function of tissues, organs, and overall health, requiring prompt recognition and treatment by qualified professionals. IFSO recognizes the need to provide a new methodology for developing IFSO position statements. All new official position statements should be developed using a GRADE-based methodology, systematically reviewing all available evidence relevant to Metabolic and Bariatric Surgery (MBS). The present Position Statement was developed using results coming from a systematic review and meta-analysis, reported herein, following the criteria of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. Fourteen Randomized controlled trials (RCTs) were included in this meta-analysis, 13 and 1 of them assessing outcomes of OAGB in primary and revisional setting respectively, with a total of 1288 patients. In the short term, OAGB exhibited a significantly higher excess weight loss percentage (EWL%) compared to RYGB. Regarding weight loss and metabolic outcomes, OAGB was not reported to be inferior in terms of weight loss and T2DM resolution when compared to RYGB. Further RCTs comparing OAGB to other MBS procedures are needed to reach a definitive recommendation regarding OAGB in revisional surgery setting. Regarding safety profile, no statistically significant differences between OAGB and other MBS were reported. This position statement was issued by the IFSO OAGB task force and approved by IFSO Scientific Committee aims to provide evidence on the effectiveness of One Anastomosis Gastric Bypass in both primary and revisional settings.

Keywords OAGB · Update · Metabolic Bariatric Surgery · IFSO Position Statement · PRISMA · Systematic Review · Meta-Analyses · GRADE methodology

Introduction

Obesity is a chronic, systemic disease that alters the function of tissues, organs, and overall health, requiring prompt recognition and treatment by qualified professionals [1].

Metabolic and Bariatric Surgery (MBS) has emerged as an effective treatment for severe obesity, leading to substantial and sustained weight loss, improved metabolic outcomes, and resolved comorbidities [2]. One Anastomosis Gastric Bypass (OAGB), previously known as Mini Gastric Bypass (MGB), is a metabolic bariatric procedure that has gained popularity for its simplicity and efficacy in both primary and revisional settings [3–5].

OAGB, firstly described as MGB by Rutledge in 2001, is a laparoscopic MBS procedure involving the creation of a small gastric pouch with a single anastomosis to the small intestine. This procedure leads to restriction of food intake and altered nutrient absorption, resulting in weight loss and metabolic improvements [6]. Several studies have reported the effectiveness of OAGB in achieving significant weight loss and long-term maintenance of metabolic outcomes in patients with obesity [5]. Moreover, OAGB has been shown to be superior, in some studies, to other metabolic bariatric procedures such as Sleeve Gastrectomy (SG), Laparoscopic Adjustable Gastric Banding (LAGB) and Greater Curvature Plication (GCP) in terms of weight loss outcomes and remission/resolution of obesity-associated medical conditions [7, 8].

In addition to weight loss, OAGB has been associated with improvements in metabolic outcomes, including remission of Type 2 Diabetes Mellitus (T2DM), Hypertension (HTN), and Dyslipidemia (DL) [5]. A study by Soong et al.

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reported that OAGB resulted in a higher rate of diabetes remission than sleeve gastrectomy and Roux-en-Y Gastric Bypass (RYGB) [9]. The mechanism behind the metabolic benefits of OAGB is thought to be related to changes in gut hormone secretion, bile acid metabolism, and gut microbiota composition [10]. These factors play a crucial role in regulating glucose homeostasis, lipid metabolism, and blood pressure, potentially leading to the resolution of metabolic disorders in individuals with obesity [11]. These positive findings led to increasing OAGB procedures in Europe and Asia–Pacific countries [12].

Despite the promising results of OAGB, some studies have raised concerns about this procedure's potential complications and long-term consequences [13]. For instance, OAGB has been associated with an increased risk of bile reflux, marginal ulcers, and nutritional deficiencies, particularly in vitamin D, B12, and iron [14–16].

However, the 2021 OAGB Position Statement found that the rate of biliary reflux appeared to be lower than expected, not exceeding 2% of all reported patients [3]. In addition, the rate of gastric cancer did not seem to be reported more often than other MBS procedures [17].

The 2021 IFSO updated position statement on OAGB confirmed the low rate (< 2%) of bile reflux [3]. The IFSO 2018 task force recommended that "bile reflux is either underreported or does not seem to be a major issue but remains a theoretical risk" [4]. Only anecdotal cases of esophageal and gastric cancer could be identified in the literature. In the updated 2021 position statement, the task force expressed that "bile reflux does not seem to be a major issue for patients who have undergone OAGB, and there have not been increased reports of esophageal or gastric cancer" [3].

In 2025, IFSO decided to update several previously published position statements (including that on OAGB) and to create new documents based on the rigorous GRADE methodology and definition of clinical questions using the PICO (Patient, Intervention, Comparison, Outcome) conceptual framework [18, 19].

Methods

IFSO recognizes the need to provide a new methodology for developing IFSO position statements. All new official position statements should be developed using a GRADE-based methodology, systematically reviewing all available evidence relevant to MBS. All working groups must perform systematic reviews and meta-analyses, including available randomized and nonrandomized controlled trials.

The present position statement was developed using results coming from a systematic review and meta-analysis herein reported, following the criteria of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement [20] (Fig. 1).

The present position statement aims to provide evidence on the effectiveness and safety of OAGB in both primary and revisional settings. All authors reported a declaration of potential conflicts of interest (COI), which were collectively discussed to determine their relevance. For all the involved members, COI was considered trivial or irrelevant. The panel of experts decided to adopt the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) described below and to formulate any recommendation exclusively on the results of meta-analyses of Randomized Clinical Trials (RCT). The decision to exclude uncontrolled studies (used only for the systematic review) has been made due to several methodological concerns of observational studies (i.e., selection bias, prescription bias, etc.) and to comply with the Cochrane Manual, recommending to avoid the use of nonrandomized studies in meta-analyses, particularly when assessing a surgical intervention (https://training.cochrane.org/handbook/current/chapter-24).

GRADE methodology for the development of guidelines

The GRADE method was developed to reduce the impact of personal opinions and prejudices on the guidelines' recommendations, inducing a greater adherence to evidence derived from methodologically valid studies [18, 20]. The first step of the development of guidelines, following this method, is the definition of a scoping document, defining aims, reference population, and target health professionals.

The following step defines questions through developing the PICOs (Patients, Intervention, Comparison, Outcomes) [19, 20]. Each recommendation is developed as the answer to a question.

For each question, the panel, through a modified Delphi method, defined some clinical outcomes potentially relevant to choosing different clinical options. Each outcome is then rated (1 to 9) for its importance. Those rating 7 or higher are classified as "critical" and represent the basis for developing the recommendation.

The Delphi method is an iterative process for systematic collation of individual expert opinions, aiming at reaching group agreement and/or produce recommendations on a certain topic [21].

By using a modified Delphi method, we aim at leveraging multiple experiences and perspectives to ensure a consensus and evidence/based clinical guidance covering all essential aspects of OAGB in both primary and revisional setting [21].

Establishing an expert panel is a mandatory part of the Delphi method. The panel must include a diverse and comprehensive set of skills, experiences and abilities relevant to the topic of interest.

Participants in the expert panel ($n = 15$) include recognized MBS surgeons and healthcare professionals in MBS

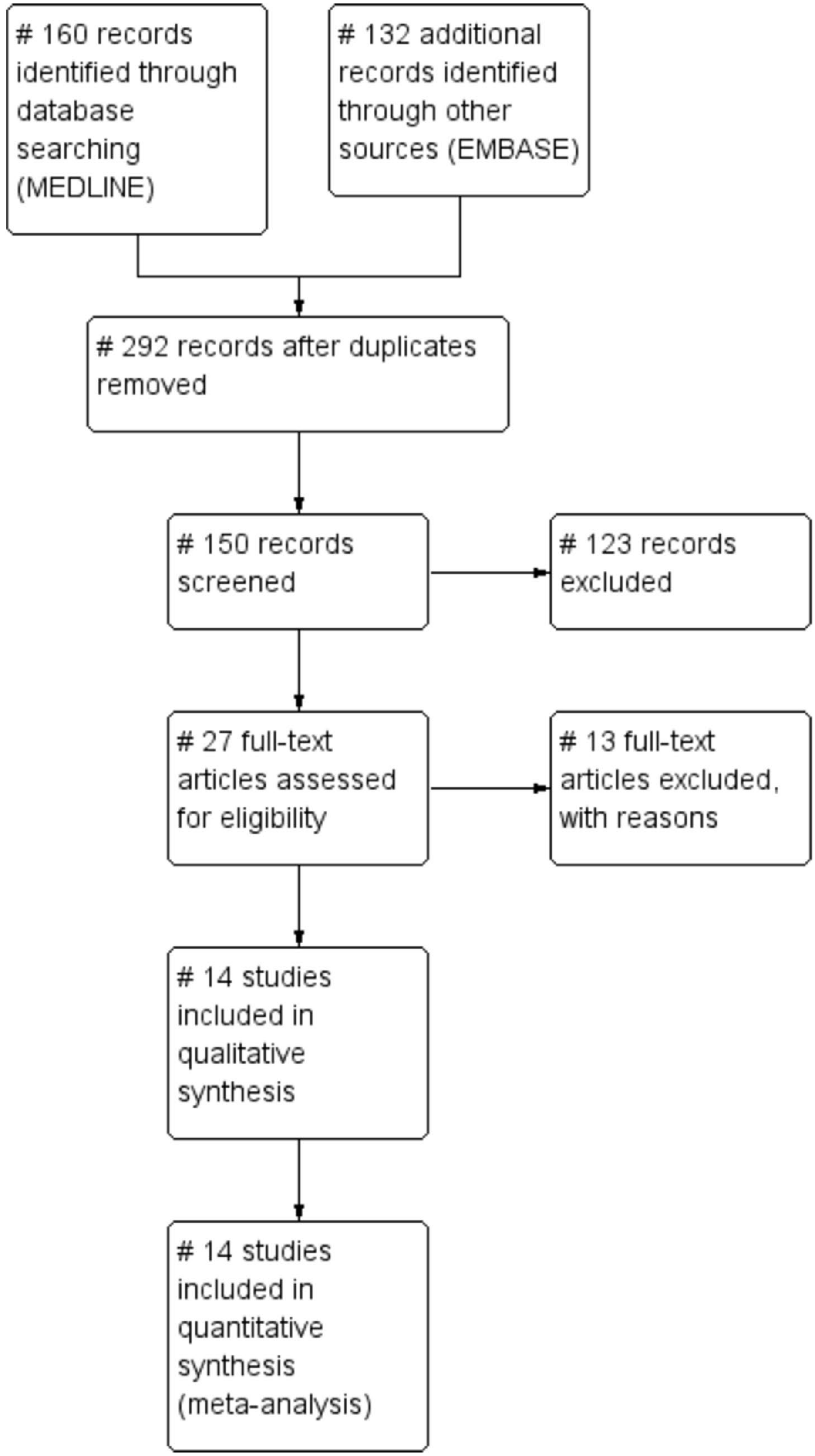


Fig. 1 Trial Flow Summary

follow-up care. The full list of panelist name and affiliations is reported in the Supplementary Appendix.

For each critical outcome, the evidence review team will systematically review relevant studies, predefining search strategies and inclusion criteria, and performing meta-analyses whenever possible. Studies and related meta-analyses are assessed for methodological quality to verify the actual strength of available evidence (Table 5S).

Further assessments include economic evaluations (usually based on cost-utility ratio, whenever possible), organizational impact, equity, acceptability, and feasibility. The final recommendation includes all those elements.

Delphi process for PICOs definitions

Given the limited number of randomized controlled trials specifically addressing OAGB in both primary and revisional settings, and the variability in clinical practices across regions, the expert panel implemented a modified Delphi process to guide the formulation of PICO questions and outcome prioritization. This consensus-building method was chosen to ensure that recommendations were grounded in the available evidence and collective clinical expertise. The Delphi technique enabled structured, anonymous input from international experts across multiple survey rounds, helping to identify the most relevant clinical questions and outcomes where empirical data were sparse or conflicting. This approach enhanced the transparency, reproducibility, and global applicability of the PICOs of the Position Statement [22].

Fifteen experts in MBS, authors of this document, were invited to propose questions with the PICO framework and to express their level of agreement or disagreement on each proposed question using a 5-point Likert scale, scored from 1 to 5 (1, strongly disagree; 2, disagree; 3, agree; 4, mostly agree; and 5, strongly agree). Results were expressed as a percentage of respondents who scored each item as 1 or 2 (disagreement) or 3, 4, or 5 (agreement). A positive consensus was reached in case of more than 66% agreement, a negative consensus in case of more than 66% disagreement, and consensus was not reached when the sum for disagreement or agreement was below 66% [18]. For the statements on which consensus had not been achieved, panelists were asked to re-rate in a second round their agreement/disagreement after discussion with all panelists (Table 1).

PICO definitions

PICO 1 – Is OAGB preferable to other weight loss interventions in patients with clinically relevant obesity (BMI $\geq$ 35 kg/m^2) and/or obesity-associated medical conditions?

PICO 2 – In subjects undergoing revisional MBS, is OAGB preferable to other surgical procedures for treating suboptimal clinical response and/or recurrent weight gain?

Meta-analysis

To address the clinical questions for the PICO reported above, we conducted a systematic review to collect all available evidence, and whenever possible, meta-analyses for each outcome were performed (Tables 1 and 2).

Study search and selection

The protocol of the present meta-analysis was previously published on the PROSPERO website (registration number: #160,359; http://www.crd.york.ac.uk/PROSPERO). The present analysis included all either placebo-or active-controlled randomized trials (RCTs) enrolling at least 15 subjects undergoing primary or revisional OAGB or reporting subgroup analyses with obesity (BMI $\geq$ 35 kg/m^2), with a duration of follow-up of at least 52 weeks (1 year). A Medline and Embase search was performed up to 30th June 2025 for RCTs and Systematic Review and Meta-analysis. Table 5S of the Supplementary Materials reports the search strategy and keywords used. Duplicate records were removed with EndNote X9 (Clarivate Analytics, Philadelphia, PA, USA).

Data extraction

Information on the baseline characteristics of the samples enrolled (age, gender, the proportion of women and patients with diabetes, and Body Mass Index – BMI) and outcomes of interest (BMI, Total Body Weight Loss—TBWL%), obesity-related medical conditions remission or improvement/resolution, Serious Adverse Events (SAE), mortality, Major Adverse Cardiovascular Events (MACE), Fasting Plasma Glucose (FPG), Glycated Hemoglobin (HbA1c), lipid profile, estimated Glomerular Filtration Rate (eGFR), creatinine, albuminuria, micro and macronutrients deficiencies, Quality of Life (QoL) were extracted from all included RCTs. Two authors performed data extraction independently (M.D.L, A.B.), and conflicts were resolved by a third investigator (M.M.).

Quality assessment

The risk of bias was assessed using the Cochrane recommended tool to determine the risk of bias in RCTs [23]. The risk of bias was described and evaluated in seven specific domains: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting, and other biases. The results of these domains were graded as 'low' risk of bias, 'high' risk of bias, or 'uncertain' risk of bias [20]. Two researchers (M.D.L, A.B.) independently assessed the risk of bias in individual studies, with discrepancies resolved by a third researcher (M.M.).

Data analysis

The principal endpoint was TBWL% at the end of treatment; secondary endpoints were:

a) TBWL% at 52 weeks (1 year), 53–104 weeks (1–2 years), 105–156 weeks (2–3 years), > 156 weeks (> 3 years)
b) Change in endpoint BMI
c) Diabetes Mellitus (DM), Hypertension (HTN), and Dyslipidemia (DL) remission
d) Metabolic dysfunction-associated steatotic liver disease (MASLD), Obstructive Sleep Apnea Syndrome (OSAS), and Osteoarticular disease resolution/improvement,
e) Any Serious Adverse Event (SAE)
f) All-cause mortality
g) Major Adverse Cardiac Events (MACE)
h) Endpoint FPG, HbA1c, lipid profile, eGFR, creatinine, albuminuria,
i) Quality of Life (QoL).

Statistical analyses

Mean and 95% Confidence Intervals (95% CI) for continuous variables and Mantel-Haenzel Odds Ratio [MH-OR] for categorical variables were calculated using random effect models. When data were reported as least-squares mean and standard error, standard deviation (SD) was obtained for each group using the following formula: "SD = √(number of patients) *(CI upper limit – CI lower limit)/3.92 and SD = √(number of patients) *SE, respectively (http://handbook-5 −1.cochrane.org/chapter_7/7_7_3_2_obtaining_standard_deviations_from_standard_errors_and.htm).

Heterogeneity was assessed by using I^2 statistics. Random-effect models were applied for all the analyses reported above.

All analyses were performed using Review Manager (RevMan), Version 5.3 (Copenhagen: The Nordic Cochrane Centre, The Cochrane Collaboration, 2014).

GRADE methodology was used to assess the quality of the body of retrieved evidence for the principal endpoint, using the GRADEpro GDT software (GRADEpro Guideline Development Tool, McMaster University, 2015. Available from gradepro.org).

Systematic review of all studies on OAGB

A systematic literature review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement using the same methodology as RCTs [20]. The last research date for RCTs, Systematic Reviews, and Meta-analyses was 30th June 2025.

A literature search was carried out in electronic databases (i.e., Embase and MEDLINE) to retrieve all papers assessing OAGB in both primary and revisional settings, as a standalone procedure or compared with other MBS. We excluded studies assessing primary and revisional procedures in the same study group or not reporting the setting [24–57]. The search string reported in Table 2S was used for this systematic review. All types of study designs were included: RCTs not satisfying the inclusion criteria for the above-reported meta-analysis (e.g., studies on OAGB versus banded OAGB, short-term trials, etc.), prospective and retrospective nonrandomized controlled studies, and case series. Studies with fewer than 15 participants were excluded. Data retrieved from this review were used only to confirm the results coming from meta-analyses.

Nevertheless, 42 systematic reviews and meta-analyses assessing the effectiveness and safety profile of OAGB in both primary and revisional settings were retrieved from the literature [5, 7, 8, 14–17, 58–92].

Results

The panel of experts nominated by IFSO identified 2 clinical questions (PICO) and achieved an immediate consensus for both (Tables 1 and 2). The approved questions and their related critical (mean values ≥ 7.0) and non-critical (mean values < 7.0) outcomes are reported in Tables 1 and 2.

Retrieved trials

Figure 1S of the supporting information reports a trial flow summary showing the results of the Medline and Embase databases search. Thirteen trials were excluded after reading the full-text [93–105] (Table 3S).

Of the 14 trials included, 13 and 1 assessed OAGB safety and effectiveness in primary and revisional settings [102, 106–118] (Tables 3 and Table 4S of Supplementary Materials).

PICO 1: Primary surgery

Out of 13 trials performed with OAGB, 7, 5, and 1 were performed versus RYGB, SG, and GCP, respectively, enrolling a total number of 1,288 patients, among them 638, 299, 331, and 20 underwent OAGB, RYGB, LSG, and LGP, respectively. The quality of studies was heterogeneous (Figs. 2S and 3S of Supporting Information). Most of the included RCTs were open-label (only one RCT was double-blinded), with a few trials adequately reporting attrition and/or description of allocation or blinding of assessors [102, 106–108, 110–118].

Effects on body weight

The average preoperative body mass index (BMI) ranged from 30.2 to 51.3 kg/m^2 in OAGB patients, with a mean study BMI of 44.7 kg/m^2.

The average preoperative age ranged from 30.7 to 45.8, with a mean age at baseline of 39.4, and a higher prevalence of female patients.

The average postoperative follow-up time ranged from 52 to 364 weeks (1 to 7 years), with a mean of 160 weeks (3 years).

Figure 2 reports TBWL% at the end of the different time points (endpoint, 1, 2, 3, 4, and 5 years). At each time-point, OAGB was associated with greater TBWL% than SG, but not RYGB and GCP (high heterogeneity, $I^2 > 90\%$ for all the analyses). No publication bias was detected at the visual analysis of the funnel plot (Fig. 4S).

At 52 weeks (1 year), when reported, the EWL% ranged from 66.9 to 104.1.

Seven RCTs reported outcomes beyond 106 weeks (2 years) [102, 108, 110–112, 114, 117].

At 260 weeks (5 years), OAGB showed better weight loss outcomes than RYGB and LSG in 4 studies [102, 108, 112, 114].

At 364 weeks (7 years), OAGB was reported to have better and more durable outcomes than LSG, with a TWL% EWL% of 27.71 and 59.99, respectively [110].

Metabolic parameters and blood pressure

Only a small fraction of studies reported information on metabolic parameters (4, 4, 3, 3, 2, and 2 RCTs for HbA1c, FPG, total cholesterol, triglycerides, systolic, and diastolic blood pressure, respectively). Only one RCT reported data on HDL-cholesterol with no between-group differences [112]. Figures 5S-7S report data for metabolic parameters. OAGB and RYGB did not differ for any of the analyzed outcomes. OAGB was associated with significantly lower endpoint systolic and diastolic blood pressure and with a nonsignificant trend toward reduction of triglycerides and FPG compared to SG.

Remission of obesity-related medical conditions

Preoperative obesity-related medical conditions status was not reported and/or not clearly stated in two RCTs [113, 115].

Three RCTs did not report postoperative rates of obesity-related medical condition resolution or partial remission [107, 113, 115].

Type 2 Diabetes Mellitus (T2DM) and Hypertension (HTN) were reported as obesity-related medical conditions of interest in 11 RCTs [102, 106–112, 114, 116–118]. The number of patients with preoperative T2DM and HTN ranged from 1 to 49 and 3 to 54 among retrieved studies. T2DM and HTN resolution rates ranged from 26 to 100% and 47% to 100%, respectively.

Obstructive Sleep Apnea (OSA) was reported among obesity-related medical conditions of interest in 8 studies. The number of patients with preoperative OSA ranged from 3 to 35 among retrieved studies, and when reported, the resolution rate ranged from 41.6% to 100% [102, 106–110, 117].

Dyslipidemia (DL) was addressed in 9 of the analyzed papers. The number of patients with preoperative DL ranged from 1to 32 among retrieved studies. When reported, resolution rate ranged from 34.6% to 100% [106, 108–110, 112, 114, 116, 118].

No between-group differences were observed for any obesity-related medical conditions assessed (Fig. 8S).

Overall and peri-operative all-cause mortality

Only 3 surgery-related deaths were recorded in two studies, 2 and 1 cases in the OAGB and LSG arm, respectively, with an overall rate of 0.2% [110, 112].

Quality of life

Only 3 RCT studies reported information on the quality of life at the end of the follow-up. Two RCTs adopted the Gastro-Intestinal Quality of Life scale, reporting no differences between the two groups (i.e., OAGB and RYGB) [106, 113, 119], and one adopted the Bariatric Analysis and Reporting Outcome System (BAROS) scale, reporting higher scores for OAGB in comparison with SG [110, 120].

Overall and peri-operative serious adverse events

No study reported data on SAE other than surgical ones. Data on surgical SAEs are reported in all studies, except for two [111, 115]. Surgical SAE occurred in 23.0%, 14.8%, and 23.9% in patients allocated to OAGB, RYGB, and SG arms, with no statistically significant between-group differences (Fig. 9S). Nevertheless, the overall incidence of de novo reflux and marginal ulcer (MU), when reported, was ~ 10% (i.e., 63/638 cases) and ~ 4% (i.e., 26/638), respectively. To note, in only one trial, 2 cases of Barrett's esophagus and 1 MU with bleeding and associated intestinal metaplasia were reported among the reasons for OAGB revision to RYGB [102].

GRADE evaluation

For the primary endpoint, the overall quality of the evidence retrieved was rated as low (Table 5S).

PICO 2

Only one RCT study was performed on patients who previously underwent LSG, comparing OAGB with RYGB [109]. The study enrolled 160 patients with a maximum follow-up of 2 years. At the end of the study, both groups achieved significantly lower BMI than their post-LSG nadir BMI (i.e., EBMIL% 89.3 vs 84.8 and BMI 27.4 vs 27.8 in the OAGB and RYGB arm, respectively). The two groups did not differ in terms of the endpoints considered. The improvement or resolution of associated medical problems and surgical complications was similarly reported, with no statistically significant between-group differences. After a 2-year follow-up, neither procedure reported significantly different rates for nutritional deficits.

Systematic review of observational studies

Table 4 reports the main characteristics and results of studies not included in the meta-analysis. Out of 157 studies retrieved, 32 and 125 were prospective and retrospective studies. Among the prospective studies, 23 and 4 assessed OAGB in the primary and revisional settings [121–147]. On the other hand, among the 125 retrospective studies, 68 and 28 assessed OAGB in the primary and revisional setting, respectively [9, 122, 148–241]. Studies assessing primary and revisional procedures in the same study group and/or not reporting the setting were excluded [24–57]. Among the prospective studies, the total number of patients undergoing primary and revisional OAGB was 7765 and 157, respectively. Among the retrospective studies, the total number of patients undergoing primary and revisional OAGB was 25,343 and 2083. The majority of the comparative studies retrieved in the primary setting compared OAGB ($n = 33{,}108$) with SG ($n = 17{,}684$), RYGB ($n = 55{,}714$), and SADIS ($n = 694$).

On the other side, the majority of the comparative studies retrieved in the revisional setting compared OAGB ($n = 2240$) with LSG ($n = 151$), RYGB ($n = 709$), and SADIS ($n = 84$).

The outcomes regarding weight loss, obesity-related medical conditions resolution rates, and safety profile are fully reported in Table 4S.

Systematic Reviews and Meta-analysis

According to the literature, 41 systematic reviews and meta-analyses were published on the topic [5, 7, 8, 14–17, 58–92].

Among them, a total of 17 analyzed the safety and effectiveness of OAGB in the primary setting as a standalone procedure ($n = 1$) [81] or compared to other MBS interventions ($n = 16$) [5, 7, 8, 59, 61–63, 66, 67, 70–72, 77, 82, 84, 89]. On the other hand, a total of 12 assessed OAGB efficacy and safety profile in the revisional setting as a standalone procedure ($n = 4$) [74, 80, 83, 90] or compared to other surgical options (i.e. RYGB and SADI-S) ($n = 9$) [58, 60, 64, 79, 86, 87, 91, 92].

According to the most recent systematic review and meta-analysis, OAGB as primary surgery for patients with obesity shows comparable outcomes to RYGB in terms of weight loss and resolution of obesity-related medical conditions. Nevertheless, it is associated with higher rates of marginal ulcers and de novo gastroesophageal reflux [8]. Nevertheless, in the revisional setting, in the recent network meta-analysis comparing different surgical options by Małczak et al. the authors reported that SADI-S might represent a feasible option for revision after LSG due to better weight loss and metabolic outcomes, with an acceptable safety profile [79]. Note that no RCTs were included in the analysis Table 5.

Concerning complications following OAGB (i.e. malnutrition, iron deficiency anemia, dumping syndrome, incidence of de novo GERD, marginal ulcers and gastroesophageal cancer incidence) and the impact of tailoring biliopancreatic limb length in postoperative outcomes, 9 and 4 systematic reviews and meta-analysis were published, respectively [14–17, 65, 68, 69, 73, 75, 76, 78, 85, 88].

According to the above-mentioned papers, the incidence of gastro-esophageal cancer following OAGB is rare and occurs 13.1 years post-intervention, while the overall incidence of marginal ulcer is 2.59, often managed successfully with conservative treatment [15, 17].

Regarding nutritional outcomes following OAGB, the most recently published systematic reviews and meta-analysis byBandlamudi reported an overall incidence of severe malnutrition necessitating readmission in 446 patients (0.9%) [14]. Moreover, when analyzing iron deficiency anemia alone, Kermansaravi et al. reported an overall incidence

Table 1 PICO for the evaluation of OAGB. Data are assessed at the endpoint if not otherwise specified

N	PICO	Disagreement (score 1–2)	Agreement (score 3–5)	Outcome (median)	Approval
1	*In subjects undergoing MBS, is OAGB preferable to other surgical procedures for the treatment of obesity?*	0.0%	100.0%	-	✓
	Outcomes (efficacy)				
1.1	Decrease of body weight (percentage of total body weight loss) at the endpoint and at different time-points (1, 2, 3, 4, and 5 years)			9	✓
1.2	Improvement of metabolic parameters (HbA1c; FPG; lipid profile; blood pressure)			8	✓
1.3	Remission of obesity-related medical conditions			8	✓
1.4	Reduction of all-cause mortality			7	✓
1.5	Improvement of quality of life			9	✓
	Outcomes (safety)				
1.6	Perioperative mortality			7	✓
1.7	Perioperative surgical complications			7	✓
1.8	Serious adverse events (surgical and non-surgical)			7	✓
2	*In subjects undergoing revisional MBS, is OAGB preferable to other surgical procedures to treat weight recurrence or insufficient weight loss?*	0.0%	100.0%	-	✓
	Outcomes (efficacy)				
2.1	Decrease of body weight (percentage of total body weight loss) at the endpoint and at different time-points (1, 2, 3, 4, and 5 years)			9	✓
2.2	Improvement of metabolic parameters (HbA1c; FPG; lipid profile; blood pressure)			7	✓
2.3	Remission of obesity-related medical conditions			7	✓
2.4	Reduction of all-cause mortality			7	✓
2.5	Improvement of quality of life			8	✓
	Outcomes (safety)				
2.6	Perioperative mortality			8	✓
2.7	Perioperative surgical complications			7	✓
2.8	Serious adverse events (surgical and non-surgical)			7	✓

Table 2 PICO definitions, answers and level of evidence of recommendations

PICO 1 – In subjects undergoing MBS, is OAGB preferable to other surgical procedures for the treatment of obesity?
We do not prefer OAGB over SG, RYGB, and SADIS, considering the risks/benefits of each surgical procedure for treating obesity *Weak recommendation for MBS, with low quality of evidence*
PICO 2 – In subjects undergoing revisional MBS, is OAGB preferable to other surgical procedures in case of suboptimal clinical response and/or recurrent weight gain?
We do not express any preference between OAGB and RYGB and SADIS for revisional surgery after suboptimal clinical response and/or recurrent weight gain following LSG, AGB, and GCP *Weak recommendation, with very low quality of evidence*

ranging from 6.5 to 56% following OAGB, varying with the BPL length adopted and the follow-up time duration [76].

Dumping Syndrome (DS), frequently addressed among complications following RYGB, is rarely reported after OAGB. Nevertheless, according to the study of Kermansaravi et al. DS was heterogeneously reported following OAGB, ranging from 0.5 to 50% and most often managed with nutritional interventions and medications [75].

With regards to the impact of biliopancreatic limb (BPL) length on efficacy and safety profile in OAGB, the work of Tasdighi et al. suggested the standardization of BPL length < 200 cm since it is associated with less frequent nutritional complications and comparable metabolic and weight loss outcomes [88]. These results are confirmed by further studies from Jain and Salman [69, 85].

Discussion

The update of previously published IFSO Position Statements has been conducted using the GRADE methodology. The results and conclusions cannot be compared to those reported in previous publications [3, 4].

Regarding metabolic outcomes, OAGB has significantly improved glucose metabolism, lipid profiles, and blood pressure control. The remission rates of type 2 diabetes, hypertension, and dyslipidemia following OAGB are impressive, highlighting the potential of this procedure to address not only weight-related issues but also metabolic disorders associated with obesity [5, 7]. However, our meta-analysis did not suggest any significant OAGB advantage in remission of obesity-associated medical conditions. In contrast, this intervention was associated with significantly lower blood pressure levels and triglycerides (no statistical trend) than SG. The lack of between-group difference for diabetes remission with SG could be potentially explained by the relatively low number of RCTs retrieved and by the underreporting of information on complications.

Regarding weight loss and metabolic outcomes, OAGB was not reported to be inferior in terms of weight loss and T2DM resolution when compared to RYGB.

RCTs reporting the long-term efficacy of OAGB are scarce. Only 5 RCTs reported a follow-up > 5 years, while in most of the other cohorts of patients, the follow-up is limited to ≤ 5 years [102, 108, 110, 112, 114]. Given the empirically documented risk of malnutrition and theoretically increased risk of gastroesophageal cancer due to esophageal bile reflux in the long term, the priority is to document the risk of these events. Long-term follow-up, high-quality studies are essential to assess the durability of weight loss and metabolic improvements following OAGB and to identify factors that may influence the long-term success of this procedure. Additionally, patient selection, surgical technique, and postoperative care play critical roles in determining the safety and effectiveness of OAGB in individual patients.

Bile reflux could be a complication following OAGB. As reported by the work of Keleidari et al. the overall incidence of bile reflux after OAGB ranged from 7.8 to 55.5% [242], in alignment with this assumption in the RCT published by Eskandaros et al. alkaline reflux was reported to be significantly higher in the OAGB group when compared to the RYGB arm [107]. However, among the reported complications of the analyzed RCTs, only 1 case of revision to RYGB due to bile reflux was reported [112]. While incidence appears low in RCTs, underreporting and insufficient follow-up limits inferring firm conclusions.

No cases of gastroesophageal cancer following OAGB were reported in the RCTs analyzed. This can be explained by the insufficient time lag between OAGB and its possible development (i.e., 13.1 years according to a recent systematic review and meta-analysis) [17]. Not to mention, carcinogenesis is a long-term process with a duration frequently exceeding the observation time of the RCTs retrieved. In an up-to-date systematic scoping review by Parmar et al. on oesophageal and gastric cancer after MBS, some cases of oesophageal and gastric cancer were recorded with not certain correlation with the previous OAGB operation [243].

According to a recent meta-analysis, the most severe and common mineral deficiencies after MBS were reported to be iron, zinc, copper, chlorine, phosphorus, and calcium, with an overall incidence of 20.1%, 18.3%, 14.4%,12.2%, 7.5% and 7.4%, respectively. Serum concentrations of other trace minerals and ions (i.e., potassium, sodium, selenium,

Table 3 RCT included

Author, year [ref]	NCT	interven-tion	control	number of patients interven-tion (control)	M/F	Mean Age (years)	Fol-low up duration (weeks)	BMI Basal	LOS (days)	operative time (min)	BMI loss /EWL / TWL/ EBMIL	T2DM base-line n	HTN base-line n	OSAS base-line n	Dyslipi-demia base-line n	T2DM reso-lution n	HTN resolu-tion n	OSAS reso-lution n	Dyslipidemia resolution n	early Compli-cations	late Complica-tions	Post-operative Mortality	conclusion
Primary surgery																							
Delko 2024 [106]	NCT02601092	OAGB	RYGB	40 (40)	2/38 (7/33)2/38 (7/33)	39.9 ±10.8 (40.4 ± 12.1) 39.9 ± 10.8 (40.4 ± 12.1)	52	39.9 ± 3.6 (39.7 ± 2.8) 39.9 ± 3.6 (39.7 ± 2.8)	3.3 ±1.4 (3.5±1.9) 3.3 ±1.4 (3.5±1.9)	100 ± 18 (105 ± 19) 100 ± 18 (105 ± 19)	EWL% 104.1% ± 24.6 (87.9% ± 24.4) EWL% 104.1% ± 24.6 (87.9% ± 24.4)	7(11)	22(20)	11(11)	16/21	6/6(11/11)	16/19(17/19)	9/9(11/11)	13/15(18/20)	In the OAGB group, 4 bleeding (2 bleedings at the gastro-jejunostomy, 1 from the gastric remnant staple line, 1 from the liver after concomitant cholecys-tectomy). All of them required endoscopic or surgical interven-tion. In the RYGB group, 2 postoperative bleedings (one at the GJ and 1 at the JJ), 2 superficial surgical site infections and 1 non-surgical compli-cation (pneumonia) occurred. 4 patients required reinterven-tion	total 14(11) MU 10(2), de novo GERD 1(1)	0(0)	%EWL 1 year after surgery was higher in OAGB than in RYGB. A better glycemic control with a higher increase in GLP-1 was observed after OAGB compared to RYGB.

Table 3 (continued)

Author, year [ref]	NCT	intervention	control	number of patients intervention (control)	M/F	Mean Age (years)	Follow up duration (weeks)	BMI Basal	LOS (days)	operative time (min)	BMI loss /EWL / TWL/ EBMIL	T2DM baseline n	HTN baseline n	OSAS baseline n	Dyslipidemia baseline n	T2DM resolution n	HTN resolution n	OSAS resolution n	Dyslipidemia resolution n	early Complications	late Complications	Post-operative Mortality	conclusion
Eskandaros 2021 [107]	NR	OAGB	RYGB	40 (40)	19/21 (20/20)19/21 (20/20)	36 ± 10 (36 ± 11)36 ± 10 (36 ± 11)	52	49.78 ± 3.40 (50.01 ± 3.50) 49.78 ± 3.40 (50.01 ± 3.50)	NR	133.80 ± 17.95 (172.78 ± 11.02) 133.80 ± 17.95 (172.78 ± 11.02)	EWL% 81.67% ± 10.37 (79.7% ± 7.2) BMI 29.38 ± 2.71 (30.24 ± 2.20) TWL% 38.5 ± 3.7 (39.5 ± 2.7) EWL% 81.67% ±10.37 (79.7% ± 7.2) BMI 29.38 ± 2.71 (30.24 ± 2.20) TWL% 38.5 ± 3.7 (39.5 ± 2.7)	15(13)	14(18)	3(2)	NR	NR	NR	NR	NR	1(3) (2 leakage, 1 hemorrhage versus one case of leakage in OAGB). No reintervention required	0	NR	OAGB is a promising bariatric procedure in weight loss for patients with obesity having mild-to-moderate GERD (up to grade B esophagitis by Los Angeles score).
Lee 2005 [113]	NR	OAGB	RYGB	40 (40)	13/27 (12/28)13/27 (12/28)	30.7±8.4 (31.1 ± 9.1) 30.7 ± 8.4 (31.1 ± 9.1)	104	44.8 ± 8.8 (43.8 ±4.8) 44.8 ± 8.8 (43.8 ±4.8)	5.5 ± 1.4 (6.9 ± 2.8) 5.5 ± 1.4 (6.9 ± 2.8)	147.7 ± 46.7 (205.0 ± 60.5) 147.7 ± 46.7 (205.0 ± 60.5)	EWL% 64.4 ± 8.8 (59.2 ± 15.1) BMI 28.3 ± 3.5 (30.0 ± 6.3) EWL% 64.4 ± 8.8 (59.2 ± 15.1) BMI 28.3 ± 3.5 (30.0 ± 6.3)	NR	NR	NR	NR	NR	NR	NR	NR	3(8) 3 minor in OAGB group, 6 minor in the RYGB. The 2 major in the RYGB were leakages	3(3) OAGB: 2 MU bleeding 1 ileus, in the RYGB: 1MU bleeding, 1 ileus, 1 pyothorax. No surgery required. MU 5%(3%)	0(0)	OAGB is a simpler and safer procedure that has no disadvantage compared with LRYGBP at 2 years of follow-up.

Table 3 (continued)

Author, year [ref]	NCT	intervention	control	number of patients intervention (control)	M/F	Mean Age (years)	Follow up duration (weeks)	BMI Basal	LOS (days)	operative time (min)	BMI loss /EWL / TWL/ EBMIL	T2DM baseline n	HTN baseline n	OSAS baseline n	Dyslipidemia baseline n	T2DM resolution n	HTN resolution n	OSAS resolution n	Dyslipidemia resolution n	early Complications	late Complications	Post-operative Mortality	conclusion
Level 2021 [114]	NR	OAGB	RYGB	9 (19)	NR	37.5 ± 6.6 (36.8 ± 9.3) 37.5 ± 6.6 (36.8 ± 9.3)	260	42.9 ± 5.5 (42.6 ± 5.9) 42.9 ± 5.5 (42.6 ± 5.9)	3	113.3 ± 41.2 (143.7 ± 21.85) 113.3 ± 41.2 (143.7 ± 21.85)	EWL% 77.2 ± 3.48 (75.6 ± 4.25)	1(2)	4(6)	NR	1(2)	1(2) 100%	2(4)	NR	1(1) 100%	1(0), small bowel injury treated intra-operatively	1 de novo GERD after OAGB	0(0)	no differences between OAGB and RYGB in terms of %EWL and resolution of comorbidities with no early or mid-term major complications or mortality. OAGB resulted in less use of surgical stapling material and less postoperative pain in patients compared to RYGB

Table 3 (continued)

Author, year [ref]	NCT	interven-tion	control	number of patients interven-tion (control)	M/F	Mean Age (years)	Fol-low up duration (weeks)	BMI Basal	LOS (days)	operative time (min)	BMI loss /EWL / TWL/ EBMIL	T2DM base-line n	HTN base-line n	OSAS base-line n	Dyslipi-demia base-line n	T2DM reso-lution n	HTN resolu-tion n	OSAS reso-lution n	Dyslipidemia resolution n	early Compli-cations	late Complica-tions	Post-operative Mortality	conclusion
Robert 2024 [102]	NCT02139813	OAGB	RYGB	114 (118)	29/85 (25/93)29/85 (25/93)	43.8 ± 11.3 (42.2 ± 10.3) 43.8 ± 11.3 (42.2 ± 10.3)	260	44.0 ±6·1 (44.0 ±5·1) 44.0 ±6·1 (44.0 ±5·1)	NR	NR	EBMIL% 75.6% ± 28.1(71·4± 29.8) EBMIL% 75.6% ± 28.1(71·4 ± 29.8)	27(28)	21(23)	35(40)	11(13)	7(8)	10(9)	34(37)	5(8)	NR	41% vs 6% denovo GERD, 11(9) nutritional complica-tions, 29(22) surgical complications. 5 conversions to RYGB(2 Barrett's oesophagus, 1 MU with bleeding and associated intestinal metaplasia, 1 gastritis,1 gastric metaplasia). MU 3(2), in the OAGB group, which all required a surgical treatment,in the RYGB group, resolved with PPIs	5 deaths unrelated to surgery	OAGB was not inferior to RYGB regard-ing percentage excess BMI loss at 5 years with similar metabolic out-comes, higher rate of GERD after OAGB. OAGB was not inferior to RYGB regard-ing percentage excess BMI loss at 5 years with similar meta-bolic outcomes, higher rate of GERD after OAGB.

Table 3 (continued)

Author, year [ref]	NCT	intervention	control	number of patients intervention (control)	M/F	Mean Age (years)	Follow up duration (weeks)	BMI Basal	LOS (days)	operative time (min)	BMI loss /EWL / TWL/ EBMIL	T2DM baseline n	HTN baseline n	OSAS baseline n	Dyslipidemia baseline n	T2DM resolution n	HTN resolution n	OSAS resolution n	Dyslipidemia resolution n	early Complications	late Complications	Post-operative Mortality	conclusion
Singh 2023 [117]	NR	OAGB	RYGB	25 (24)	7/18 (8/16) 7/18 (8/16)	45.8 ± 9.1 (46.6 ± 8.2) 45.8 ± 9.1 (46.6 ± 8.2)	208	47.0 ± 6.7 (44.7 ± 4.9) 47.0 ± 6.7 (44.7 ± 4.9)	3.3 ± 1.7 (4.3 ± 2.0) 3.3 ± 1.7 (4.3 ± 2.0)	102.2 ± 28.4 (142.0 ± 2.0) 102.2 ± 28.4 (142.0 ± 2.0)	TWL% 24.9 ± 10.9 (26.6 ± 10.0)	25(24)	25(24)	18(21)	NR	18(17)	15(13)	13(19)	NR	3(3) for both OAGB and RYGB: 2 trocar site SSI requiring local wound care, 1 UTI	8(7) OAGB: 2 MU, 1 nausea and vomiting requiring IV hydration, 5 Iron/vitamin and mineral deficiency requiring IV supplementation RYGB: 1 MU, 6 Iron/vitamin and mineral deficiency requiring IV supplementation	0(0) 30-day mortality	OAGB is non-inferior to RYGB in terms of remission of T2DM, weight loss, and early and late complications with a shorter operating time. OAGB is non-inferior to RYGB in terms of remission of T2DM, weight loss, and early and late complications with a shorter operating time.
Hany 2024 [108]	NR	OAGB	LSG	150 (150)	37/113 (29/121) 37/113 (29/121)	34.7 ± 11.4 (34.0 ± 10.7) 34.7 ± 11.4 (34.0 ± 10.7)	260	43.8 ± 3.2 (44.2 ± 3.7) 43.8 ± 3.2 (44.2 ± 3.7)	2.0 (2.0-6.0) (2.0 (2.0-6.0)) 2.0 (2.0-6.0) (2.0 (2.0-6.0))	83.89 ± 2.45 (58.41 ± 3.11) 83.89 ± 2.45 (58.41 ± 3.11)	TWL% 40.8 ± 1.9 (29.2 ± 3.1) EWL% 96.2 ± 11.4 (68.4 ± 9.1) TWL% 40.8 ± 1.9 (29.2 ± 3.1) EWL% 96.2 ± 11.4 (68.4 ± 9.1)	5(7)	17(14)	9(11)	32(36)	4(2)	8(1)	6(8)	15(8)	13(15) OAGB: 4 MVO, 1 leak, 2 vomiting, 3 bleeding, 3 melena LSG: 5 MVO, 5 vomiting, 2 bleeding, 1 DVT,1 melena, 1 leak	24(21) OAGB: 9 de novo GERD, 5 anemia, 2 protein malnutrition, 6 MU, 2 trocar site hernia LSG: 17 de novo GERD, 3 anemia, 1 trocar site hernia	NR	OAGB had significantly superior WL effectiveness and durability throughout the 5 years of follow-up than LSG. Moreover, OAGB had significantly higher WL, lower WR, significantly less de novo GERD, and higher incidence of BR than LSG. Both procedures had comparable complication rates, excellent remissions in associated medical problems, and improved QoL.

Table 3 (continued)

Author, year [ref]	NCT	intervention	control	number of patients intervention (control)	M/F	Mean Age (years)	Follow up duration (weeks)	BMI Basal	LOS (days)	operative time (min)	BMI loss /EWL / TWL/ EBMIL	T2DM baseline n	HTN baseline n	OSAS baseline n	Dyslipidemia baseline n	T2DM resolution n	HTN resolution n	OSAS resolution n	Dyslipidemia resolution n	early Complications	late Complications	Post-operative Mortality	conclusion
Jain 2024 [110]	NR	OAGB	LSG	101 (100)	39/62 (35/65)39/62 (35/65)	42.89 ± 14.02 (39.89 ± 11.75) 42.89 ± 14.02 (39.89 ± 11.75)	364	44.71 ± 8.75 (44.87 ± 7.71) 44.71 ± 8.75 (44.87 ± 7.71)	3.2 ± 0.64 (3.95 ± 0.73) 3.2 ± 0.64 (3.95 ± 0.73)	64.81 ± 10.62 (44.81 ± 10.62) 64.81 ± 10.62 (44.81 ± 10.62)	TWL% 27.71 ± 12.27 (23.22 ± 12.66) EWL% 59.99 ± 23.32 (50.78 ± 28.48) TWL% 27.71 ± 12.27 (23.22 ± 12.66) EWL% 59.99 ± 23.32 (50.78 ± 28.48)	49(47)	53(56)	24(18)	26(32)	31(22)	32(29)	10(5)	9(6)	7(8) OAGB: 3 hemorrage, 2 GERD, 2 MU LSG: 4 hemorrage, 3 GERD, 1 leak	NR	1 (1)	LSG and OAGB are successful bariatric procedures over the long term. OAGB outperforms LSG and has significantly higher %EWL and %TWL over the long term. LSG and OAGB are successful bariatric procedures over the long term. OAGB outperforms LSG and has significantly higher %EWL and %TWL over the long term.
Lee 2014 [112]	NCT00540462	OAGB	LSG	30 (30)	8/22 (8/22)8/22 (8/22)	44.6±8.6 (46.4 ± 8.1) 44.6 ± 8.6 (46.4 ± 8.1)	260	30.2±2.2(31±2.8)	NR	NR	BMI 23.3 ± 2.0 (25.1 ± 2.4) weight change % 22.8 ± 5.9 (20.1 ± 5.3)BMI 23.3 ± 2.0 (25.1 ± 2.4) weight change % 22.8 ± 5.9 (20.1 ± 5.3)	30(30)	16(17)	NR	16(17)	26(15)	12(8)	NR	14(6)	NR	5 total. OAGB: 2 AMI, 1 MU LSG: 1 end-stage kidney disease requiring hemodyalisis, 1 minor stroke 5 revision: 1 in OAGB for bile reflux, 4 after LSG	1(0) acute myocardial ischemia	In mildly obese patients with T2DM, LSG is effective at improving glycemic control at 5 years, but OAGB was more likely to achieve better glycemic control than SG and had a higher incretin effect compared to SG

Table 3 (continued)

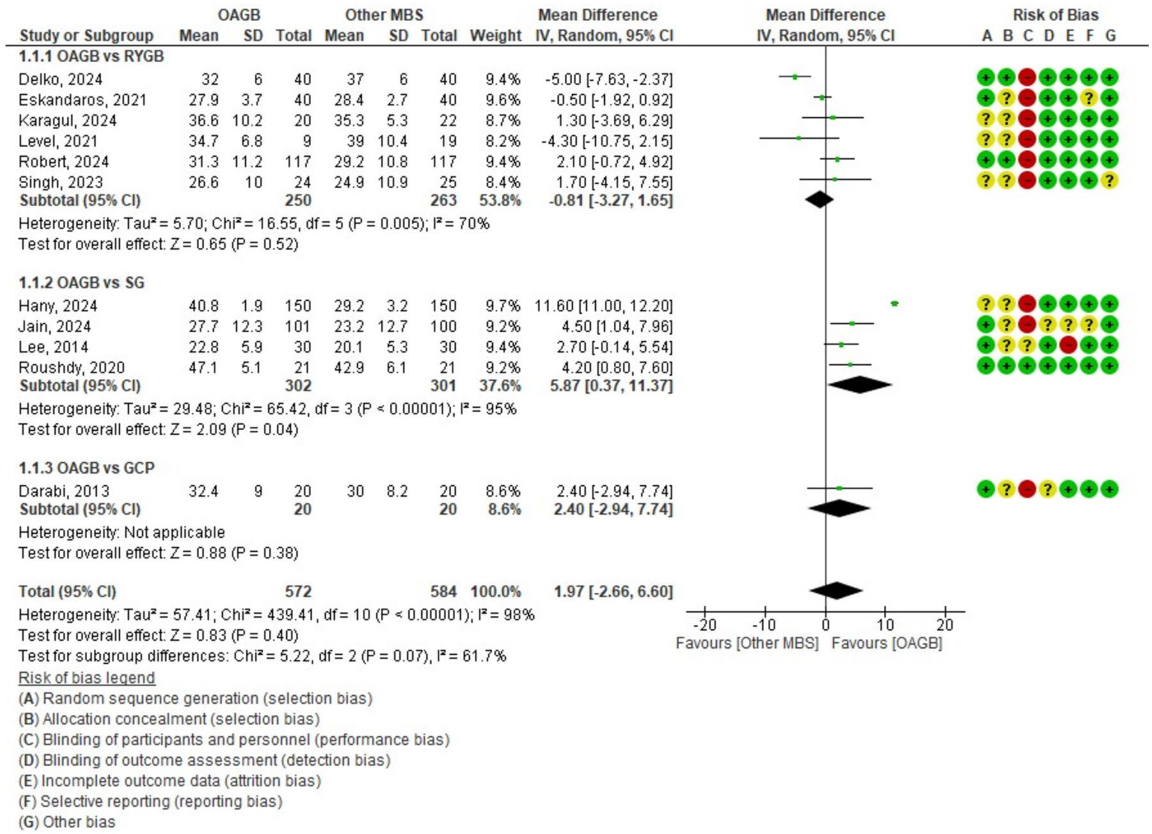
Author, year [ref]	NCT	intervention	control	number of patients intervention (control)	M/F	Mean Age (years)	Follow up duration (weeks)	BMI Basal	LOS (days)	operative time (min)	BMI loss /EWL / TWL/ EBMIL	T2DM baseline n	HTN baseline n	OSAS baseline n	Dyslipidemia baseline n	T2DM resolution n	HTN resolution n	OSAS resolution n	Dyslipidemia resolution n	early Complications	late Complications	Post-operative Mortality	conclusion
Roushdy 2021 [116]	NR	OAGB	LSG	21 (21)	0/20 (2/18)0/20 (2/18)	33 ± 3.09 (34.9 ± 6.16) 33 ± 3.09 (34.9 ± 6.16)	52	51.3 ± 6.5 (48.9 ± 6.14) 51.3 ± 6.5 (48.9 ± 6.14)	4 (3-5) (3 (2-10))4 (3-5) (3 (2-10))	86±14.06 (52.87±15.37) 86±14.06 (52.87±15.37)	TWL% 47.1 ± 5.1 (42.9 ± 6.1 EWL% 78.14 ± 1.79 (61.3 ± 2.71) EBMIL% 88.5 ± 12.2 (79.6 ± 14.7) TWL% 47.1 ± 5.1 (42.9 ± 6.1 EWL% 78.14 ± 1.79 (61.3 ± 2.71) EBMIL% 88.5 ± 12.2 (79.6 ± 14.7)	9(7)	8(7)	NR	4(6)	9(6)	5(4)	NR	3(4)	0(1), hemorrage	0(5) 3 dyspepsia, 2 iron deficiency anemia	0 (0)	OAGB was associated with significantly higher excess weight loss than LSG. Improvement in comorbidities and the incidence of postoperative complications were similar between the 2 procedures. The reduction in fasting ghrelin and postprandial GLP-1 serum levels at 6 and 12 months after LSG was significantly higher than that after OAGB.
Darabi 2013 [118]	NR	OAGB	LGP	20 (20)	3/17 (8/12)3/17 (8/12)	36.6 ± 13.7 (34.6 ± 10.9)36.6 ± 13.7 (34.6 ± 10.9)	52	49.5 ± 8.0 (47.6 ± 5.3) 49.5 ± 8.0 (47.6 ± 5.3)	5.2 ± 1.0 (1.6 ± 0.5) 5.2 ± 1.0 (1.6 ± 0.5)	125.0± 9.8 (71.0 ± 11.5) 125.0± 9.8 (71.0 ± 11.5)	EWL% 66.9 ± 23.7 (60.8 ± 16.6) TWL% 32.4 ± 9.0 (30.0 ± 8.2) EWL% 66.9 ± 23.7 (60.8 ± 16.6) TWL% 32.4 ± 9.0 (30.0 ± 8.2)	2(1)	3(3)	NR	9(7)	1(0)	2(1)	NR	4(3)	4(3) nausea and vomiting	0(0) major complications 0(0) revisions 2(0) MU	0 (0)	Both LGP and OAGB are effective treatments for obesity. Both procedures were able to significantly improve obesity related medical conditions. It was shown thatL LGP is a simpler and cheaper procedure with shorter operative time compared with LMGB,with similar weight lossefficacy at 1 year follow-up.

Table 3 (continued)

Author, year [ref]	NCT	intervention	control	number of patients intervention (control)	M/F	Mean Age (years)	Follow up duration (weeks)	BMI Basal	LOS (days)	operative time (min)	BMI loss /EWL / TWL/ EBMIL	T2DM baseline n	HTN baseline n	OSAS baseline n	Dyslipidemia baseline n	T2DM resolution n	HTN resolution n	OSAS resolution n	Dyslipidemia resolution n	early Complications	late Complications	Post-operative Mortality	conclusion
Karagul 2024 [111]	NR	OAGB	RYGB	20 (18)	3/17 (4/14)3/17 (4/14)	43.60 ± 11.10 (42.72 ± 13.77) 43.60 ± 11.10 (42.72 ± 13.77)	156	44.75 ± 6.10 (46.69 ± 6.62) 44.75 ±6.10 (46.69 ± 6.62)	NR	NR	EWL% 84.77 ± 18.90 (82.15 ± 24.17) TWL% 35.28 ± 5.35 (36.64 ± 10.25) EWL% 84.77 ± 18.90 (82.15 ± 24.17) TWL% 35.28 ± 5.35 (36.64 ± 10.25)	13(10)	9(6)	3(2)	NR	12(7)	6(4)	NR	NR	NR	4 de novo GERD in OAGB group, no other data on postoperative complications reported	NR	Both OAGB and RYGB have similar success rates in the treatment of obesity. Both surgeries are effective in treating obesity-related comorbidities.
Musella 2021 [115]	NR	OAGB	LSG	28 (30)	NR	NR	52	48.5 ± 8.9 (47.5 ± 7.3) 48.5 ± 8.9 (47.5 ± 7.3)	NR	NR	EBMIL% 80.3 ± 33.9 (77.6 ± 18.8) BMI 31.3 ± 4.6 (30 ± 4.3) EBMIL% 80.3 ± 33.9 (77.6 ± 18.8) BMI 31.3 ± 4.6 (30 ± 4.3)	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	Prospective evaluation of reflux with HRiM and MII-pH and a validated clinical questionnaire demonstrated that, in the first postoperative year, acid reflux does not significantly worsen both after OAGB and LSG. However, rate of esophagitis ≥ B increased 12 months after LSG. Non-acid reflux does not increase after OAGB.

Table 3 (continued)

Author, year [ref]	NCT	interven-tion	control	number of patients interven-tion (control)	M/F	Mean Age (years)	Fol-low up duration (weeks)	BMI Basal	LOS (days)	operative time (min)	BMI loss /EWL / TWL/ EBMIL	T2DM base-line n	HTN base-line n	OSAS base-line n	Dyslipi-demia base-line n	T2DM reso-lution n	HTN resolu-tion n	OSAS reso-lution n	Dyslipidemia resolution n	early Compli-cations	late Complica-tions	Post-operative Mortality	conclusion
Revisional surgery after LSG																							
Hany 2022 [109]	NR	OAGB	RYGB	80 (80)	11/69 (11/69)	42.6 ± 7.1 (43.4 ± 7.5)	104	before revision: 45.1 ± 8.3 (44.9 ± 6.6)	NR	85.6 ± 18.6 (104.9 ± 13.7)	EBMIL% 89.3 ± 15.4 (84.8 ± 18.2) BMI 27.4 ± 3.1 (27.8 ± 2.2)	12(6)	11(14)	6(7)	18(16)	9(4)	8(11)	NR	8(13)	3(3) OAGB: 1 bleeding, 1 wound infection, 1 portal vein partial thrombosis RYGB: 1 leak, 1 bleeding, 1 wound infection	1(4) OAGB: 1 port site hernia RYGB: 1 port site hernia, 1 IH, 2 MU	0 (0)	Both revisional RYGB and OAGB had comparable significant weight loss effects when performed for WR after LSG, with comparable resolution or improvement of associated medical problems. After a 2-year follow-up, both procedures were safe, with no significant differences in the occurrence of complications and nutritional deficits.



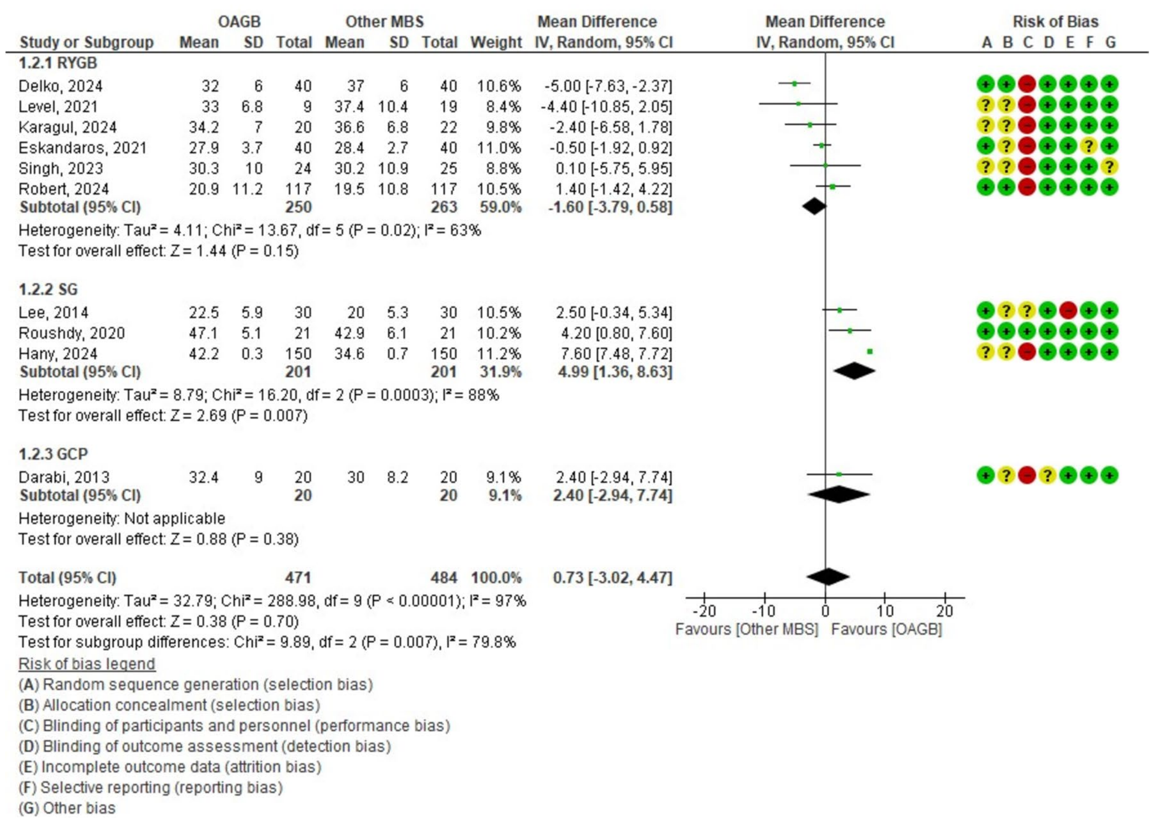


Fig. 2 Effects of OAGB in comparison with other MBS on TBWL% at endpoint (Panel A), 1 year (Panel B), 2 years (Panel C), 3 years (Panel D), 4 years (Panel E), and 5 years (Panel F)

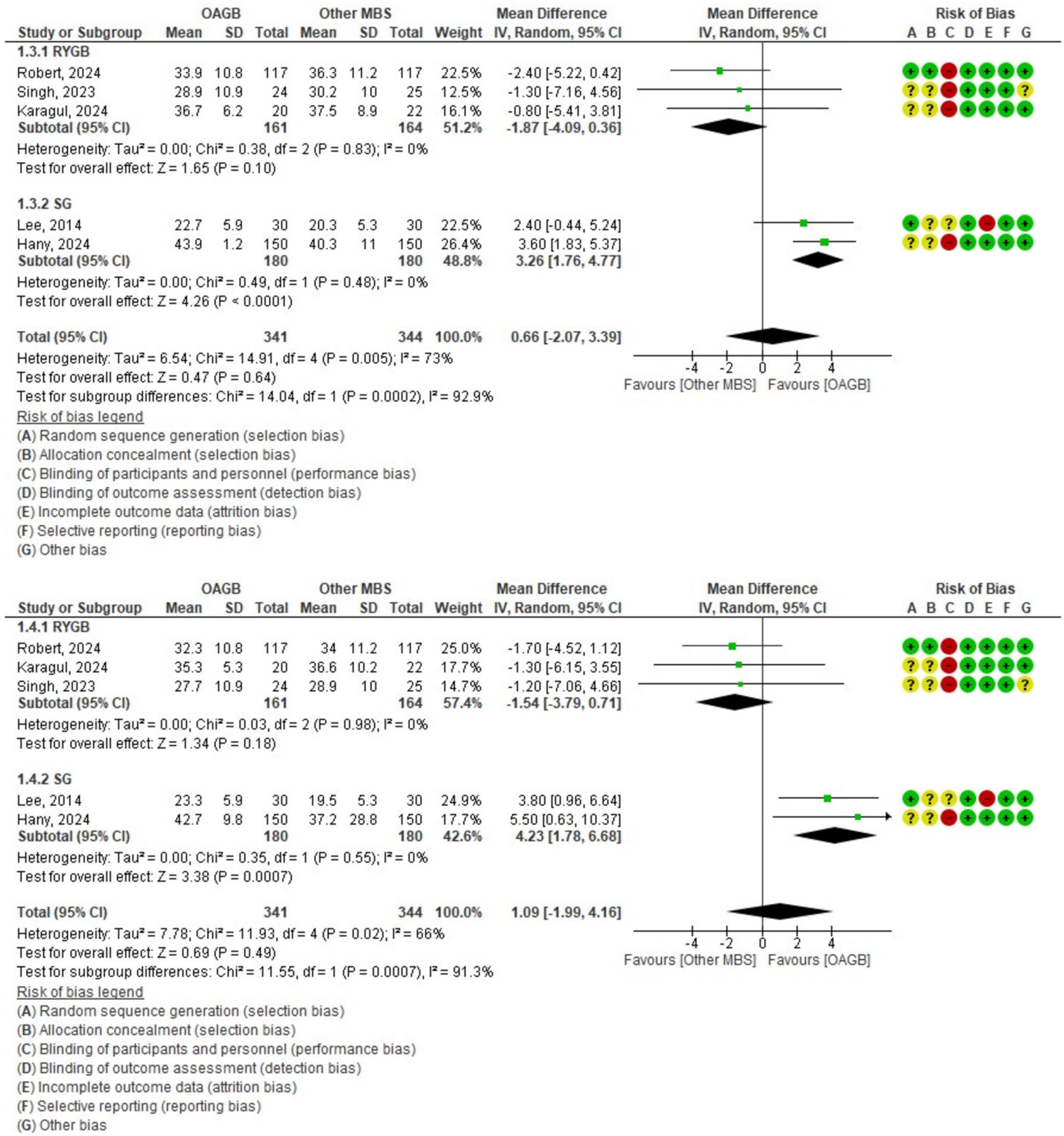
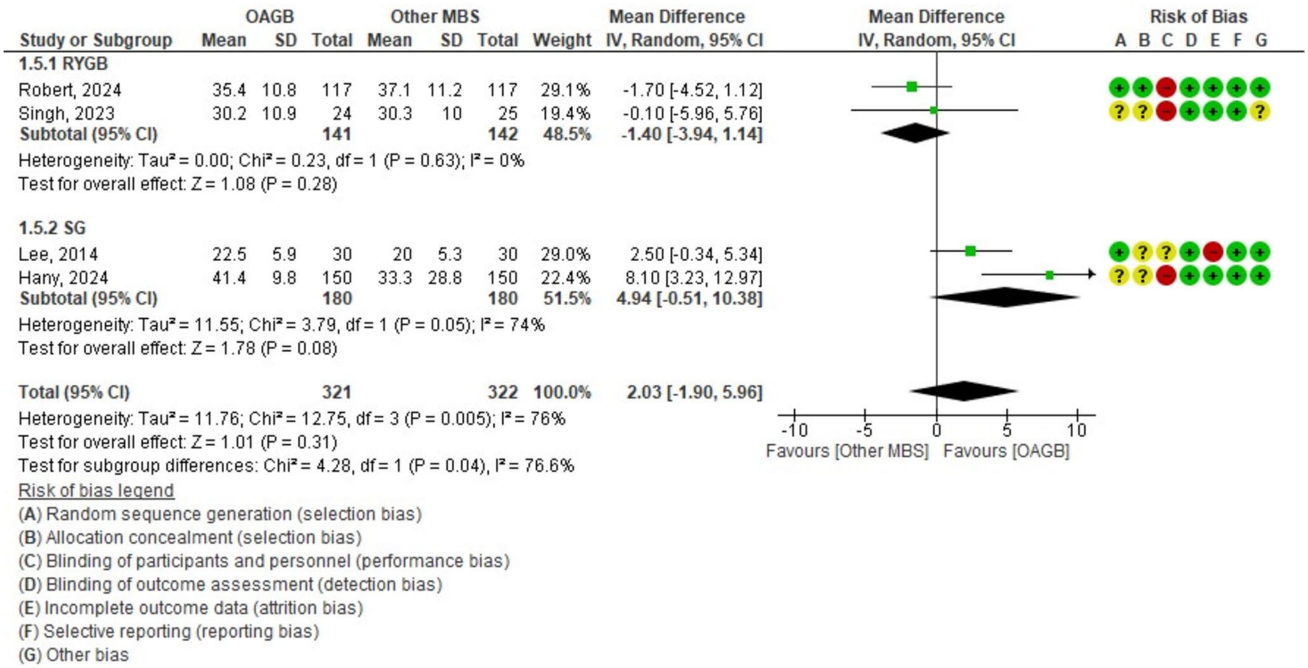


Fig. 2 (continued)

copper, and zinc) showed no significant change before and after MBS. Nevertheless, OAGB showed a higher rate of serum iron and zinc deficiencies when compared to RYGB [244].

On the other side, in the case series from Liagre et al. an incidence of vitamin A deficiency was reported at 2 and 8 years following OAGB with BPL length of 150 cm, highlighting the paramount importance of post-operative assessment of fat-soluble vitamins post-operative dosing, need of a proper supplementation in line with nutritional biochemical results [179].

In most papers analyzed, trace minerals and fat-soluble vitamins were not commonly measured following OAGB, and insufficient data regarding postoperative nutritional



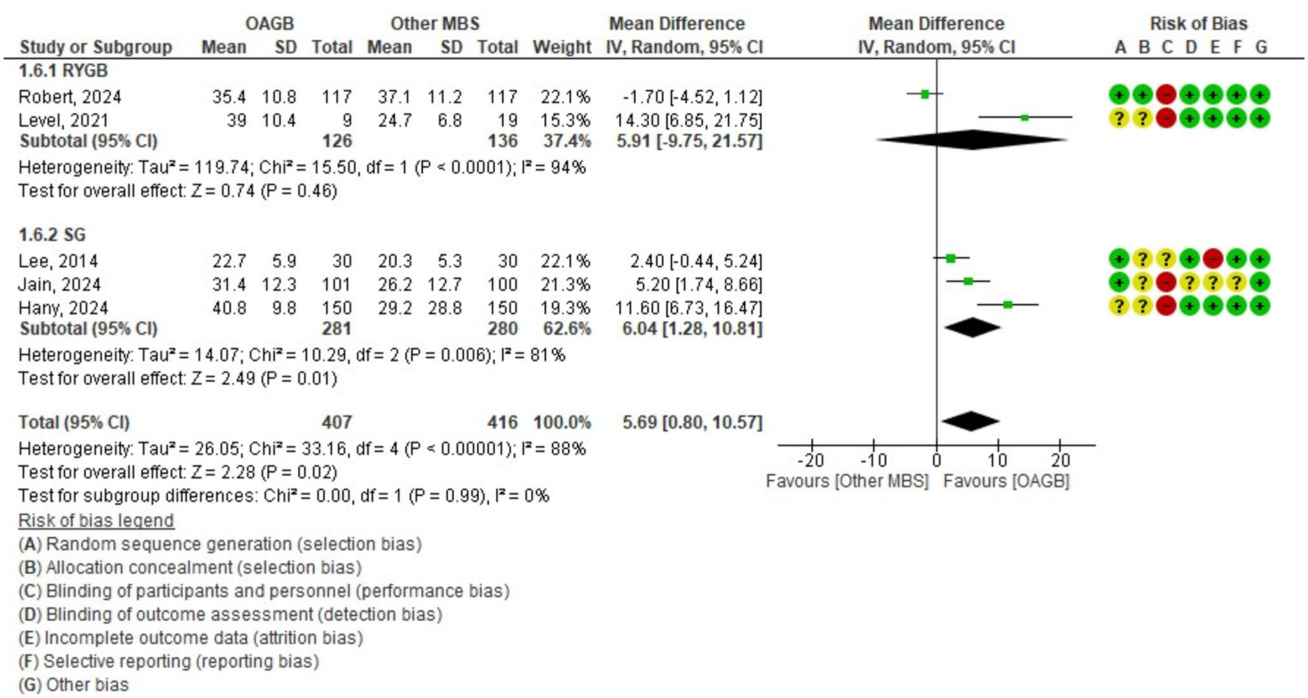


Fig. 2 (continued)

assessment and relative adjustments were reported. There are several reports of their deficiency following MBS, so professional figures in the field should be adequately educated to promptly identify and treat these deficiencies using a combination of signs, symptoms, and laboratory values [14, 245].

In the setting of revisional surgery, OAGB efficacy and safety were assessed in one RCT only, reporting significant weight loss outcomes, comparable to RYGB, when performed for recurrent weight gain after LSG. However, since one single RCT was published assessing outcomes of OAGB in the revisional setting, strong recommendation cannot be supported by high quality evidence. Since the need

Table 4 Prospective studies (primary and revisional surgery)

Prospective Studies

Primary surgery

First Author, year [ref]	Group (comparative)	n = (comp group)	Maximum time point (n = or % follow-up)	Age (years)	M/F	Baseline BMI (kg/m2)	Duration of surgey (min)	LOS(days)	T2DM	OSAS	HTN	DYSLIPIDEMIA	Weight loss outcomes	Early surgical complications	Late surgical complications	Mortality(n)	T2DM remission(n)	HTN remission(n)	OSAS remission(n)	Dyslipidemia remission(n)	Conclusion
Lee 2012 [121]	OAGB(RYGB)	1163(494)	10 years, follow-up rate at 5 years was 56 %	32.3 ± 9.1 (33.5 ± 9.3)	313/850 (132/362)	41.1 ± 6.1 (40.5 ± 5.8)	115.3 ± 34.6 (159.2 ± 32.3)	3.7 ± 4.1 (3.9 ± 2.1)	NR	NR	NR	NR	27.7 ± 5.8(29.2 ± 5.3) BMI at 5 years	7.5(20)%	0(5)%	2(1)	NR	NR	NR	NR	LMGBP can be regarded as a simpler and safer alternative to LRYGB with similar efficacy at a 10-year experience.
Rheinwalt 2019 [122]	OAGB(RYGB)	324(288)	3 years, follow-up rate at 3 years was 42.9(50) %	42.51 ± 11.36 (41.40 ± 10.0)	82/242 (58/230)	53.75 ± 6.51 (44.53 ± 3.65)	80.28 ± 20.31 (103.36 ± 29.69)	4(3-34) 4(2-38)	121(87)	191(128)	222(173)	241(194)	TWL % after 3 years 36.18 ± 9.18 (33.80 ± 8.75)	10(9)	65(83) among them 13(7) cases of malnutrition, 1(11) IH surgery, 10(16) MU, 6(42) anastomotic stenosis	0(0)	48(39)	55(49)	47(41)	NR	TWL, malnutrition, and comorbidity remission 3 years postoperatively were comparable. Gastroesophageal reflux was less frequent after RYGB, whereas shorter operation times ($p < 0.0001$), less frequent stenosis ($p < 0.0001$), and dumping syndrome d in OAGB-MGB.
Carbajo 2018 [123]	OAGB	100	2 years	42.56 ± 11.02	29/71	42.61 ± 6.66	97.97 ± 13.09	1	NR	NR	NR	NR	at 24 months BMI 25.33 ± 3.35 EWL%88.10 ± 16.99 EBMIL% 103.79 ± 25.89	0	0	0	NR	NR	NR	NR	OAGB seems to be effective in treating obesity, with short hospital stays.
Abouzeid Osman 2018 [124]	OAGB	17	100% at 18 months follow-up	42.6± 13.8	5/ 12	26.7 ± 2.3	67.2 ± 21.7	3.2 ± 1.1	17	NR	NR	NR	22.8 ± 2.5	1 (wound infection)	3 (minor bleeding, iron deficiency)	0	15/17	NR	NR	NR	OAGB seems to be effective in treating patients with diabetes and obesity.
Hernández 2020 [125]	OAGB	94	1 years (100%)	43.7 ± 10.6	27/67	41.6 ± 6.3	NR	NR	NR	NR	NR	NR	BMI 23.8 ± 3.9 % EBMIL 107 TWL % 38.8 ± 7.7%.	NR	NR	NR	NR	NR	NR	NR	OAGB obtains a relevant weight loss in patients with morbid obesity, mainly, due to fat mass reductions. However, this procedure also provokes FFM and bone mass decreases, especially in females, but not significantly greater than other restrictive or mixed procedures.
Felsenreich 2023 [126]	OAGB	21	5.1 ± 2.3 years (100%)	43.1 ± 10.3	6/15	44.7 ± 5.6	NR	NR	6 (28.6%)	3 (14.3%)	10 (47.6%)	7 (33.3%)	TWL (%) 34.4 ± 8.3 EWL (%) 78.7 ± 20.9	NR	NR	NR	5(95.3%)	4(71.4%)	3(100%)	7(100%)	decreasing rates of acid reflux and an increase in non-acid reflux after a mid-term outcome in primary OAGB patients.
Jiménez 2020 [127]	OAGB	100	2 years (100%)	42.61 ± 11.33	29/71	42.61± 6.66	NR	NR	NR	NR	NR	NR	EBMIL % 103.79 ± 25.89 TWL % 39.87 ± 7.30 EWL % 88.10 ± 16.99	NR	NR	NR	NR	NR	NR	NR	OAGB surgery led to significant reductions in body weight, a significant improvement in the lipid profile, and a reduction in cardiovascular risk.
Mustafa 2020 [128]	OAGB (RYGB)	198 (957)	2 years	44.5 ± 11.8 (46.2 ± 11.1)	66/132 (121/836)	48.8 ± 7.8 (46.4 ± 6.9)	NR	NR	NR	NR	NR	NR	% TWL 35.1 ± 9 (31.1 ± 9.7) % EWL 74.5 ± 19.3 (70.1 ± 23.2)	1 iatrogenic injury - 1 intra-abdominal collection (2 bleeding - 2 intraabdominal collection - 1 iatrogenic injury)	2 small bowel obstruction (2 smallbowel obstruction - 22 internal hernia - 52 JJ complications)	NR	NR	NR	NR	NR	Both LRYGB and OAGB have shown good 2-year weight loss profiles with OAGB having a greater weight loss effect in comparison. Of the two techniques, there was no difference in the overall complication rates, marginal ulcerations and re-operations.

Table 4 (continued)

Salman 2020 [129]	OAGB	62	12 months 100%	43.9 ± 6.8	NR	42.2 ± 2.9	NR	NR	21 (33.9%)	15 (24.2%)	24 (38.7%)	17 (27.4%)	%EBMIL 58,5	11(2 bleeding, 2 biliary reflux,1 stenosis, 3 SSI, 2 dehydration, 1 PE)	NR	NR	12/21(57%	14/24(58.3%)	8/15(53%)	9/17(53%)	OAGB can significantly impact the inflammatory cytokine profile in obese patients with possible subsequent protection from obesity-related comorbidities
Pizza 2020 [130]	OAGB 150cm (OAGB 180cm - OAGB 200cm)	Total 180,60 -60-60	2 years	35.2 ± 9	21/49-21/49-21/49	44.93 ± 7.56	NR	NR	tot=33 (18%) (11 (19%) – 12 (20%)-10 (16%))	NR	TOT=99 (55%) (34 (56%) - 33 (55%) - 32 (54%))	NR	EBWL% 60.7 ± 16.1- 61.6 ± 13.5 -61.2 ± 12.1 TWL% 40.7 ± 9.4 -41.6 ± 9.2- 41.8 ± 8.9	Tot 17(2 leaks, 1 smallbow-elobstruction/ internalhernia, 10 bleeding,4 wound infections)	2(1 MU, 1 leak)	NR	NR	NR	NR	NR	Standardization of BPL length shorter than 200 cm is suggested, potentially minimizing malnutrition-related outcomes. This study seems to show that a BPL of 150–180 cm is safe and effective in terms of EWL and comorbidity improvement with low malnutrition effects even in BMI > 50.
Liagre 2021 [131]	OAGB	245	80 months	39.7 ± 13.2	85/170	54 ± 4.9	NR	NR	41/245(17%)	70/245(29%)	75/245(30%)	41/245(17%)	at 80 months TWL% 42.9 ± 11.8 EWL% 80.5 ± 21	14(7 bleeding,3 pneumonia, 3 leak,1 phlebitis)	22(6 IH, 3 MU, 3 GERD, 2 suboptimal clinical response, 4 chronic diarrhea, 2 hypglicemia	2(no MBS related)	36(92%)	50(76%)	66(97%)	39(98%)	OAGB with a biliopancreatic limb of 150 cm is feasible and associated with sustained weight loss in the treatment of severe obesity with BMI > 50 kg/m2. Shot-term morbidity is low.
Akool 2021 [132]	OAGB (SG)	20 (15)	24 months 100%	36.3 ± 6.7	14/6 (9/6)	46.53 ± 5.64	NR	1 ± 0.5	100%	NR	NR	NR	BMI at the endpoint 24.47 ± 1.64(25.20 ± 2.38)	NR	NR	NR	20/20(100%) /15/15(100%)	NR	NR	NR	OAGB was more efficient than sleeve gastrectomy in controlling and remission of DM type 2 without the need for medications.
Barzin 2021 [133]	OAGB (SG)	1118 (2746)	36 months	39.9 ± 10.7 (39.2 ± 11.6)	199 /919 (655/2090	45.6 ± 6.3 (44.3 ± 5.6)	NR	NR	384(36.0%) /592(23.1%)	314(28.6%) /744(27.6%)	NR	481(46.1%) /1206(46.5%)	at 36 months TWL% 33.8 ± 9.8 (28.4 ± 9.0) EWL%76.4 ± 22.3 (67.0 ± 22.4)	NR	NR	NR	NR	NR	NR	NR	In the SG compared to the OAGB group, FFML was greater, especially early after the surgery, emphasizing the need for therapeutic interventions such as regular exercise programs and dietary intake modifications
Haggag 2021 [134]	OAGB	40	36 months	44.5 (18-60)	9/31	54.1 (41.4-84.4)	120 (60-360)	4(2-7)	16 (40%)	25 (62.5%)	15 (37.5%)	10 (25%)	at 36 months EWL% 62.3 (42.5-77.8) EBMIL% 68.3 (48.5-85.6)	3(1spleen injury, 1 leak, 1 stapler malformation)	12/40(2 protein malnutrition, 1 requiring OAGB reversal, 6 bille reflux,2 iron deficiency anemia, 1 MU,1 suboptimal weight loss associated with gastro-gastric fistula)	NR	100%	57.10%	NR	NR	OAGB is a safe and efficient bariatric procedure with acceptable morbidity rate. LOAGB is not associated with significant biliary reflux or pathological changes in the esophagogastric mucosa
Ibrahim 2022 [135]	OAGB (RYGB)	30 (35)	12 months 100%	37.7 ± 9.9 (36.9 ± 10.2)	4/26 (14/21)	53.5 ± 9.4 (52.3 ± 5.1)	119.7 ± 17.7 (143.1 ± 16.9)	NR	17 (56.7%) / 22 (62.9%)	NR	7 (23.3%) / 11 (31.4%)	NR	at 12 months 67.0 ± 12.2 (55.3 ± 5.7)	NR	NR	NR	11 (64.7%) /14 (63.6%)	4 (57.1%)/ 5 (45.5%)	NR	NR	OAGB was more efficient in weight reduction and a significantly faster operation. LPRYGB showed a better QoL of life 1 year after surgery.
Kermansaravi 2022 [136]	OAGB	197	5 years (42%)	38 (18.2–69.3)	63/134	53.7 (50–114.6)			35 (17.8%)	41 (20.8%)	33 (16.8%)	48 (24.4%)	at 5 years % TWL 37.7 (17.9–62.9) %EWL 66.2 (29.3–98.9)	0.5% (1 patient died do to venous tromboembolism)	0%	1(0.5%) venous thromboembolism (VTE) two weeks after surgery	33 (94.29)	30 (90.9%)	71 (100%)	35 (72.9%)	OAGB can be performed safely in patients with BMI ≥ 50 kg/m2, as a one-stage bariatric procedure without a significant complication rate.

Table 4 (continued)

Salman 2022 [137]	OAGB (SG)	67 (63)	12 months 100%	41.75±7.81 (41.44±7.81)	42/25 (39/24)	41.88±3.45 (42.92±4.03)	NR	NR	67/63	9 (13.4%)/9 (14.3%)	31 (46.3%)/33 (52.4%)	NR	BMI 33.72±3.15	NR	NR	NR	31 (46.35%)/29 (46%)	20 (71.4%)/22 (73.3%)	NR	NR	Bariatric surgery significantly reduced the severity of albuminuria 1-year after the procedure, with no preference for one procedure over the other.
Bourbour 2021 [126]	OAGB	98	12 months 100%	NR	32/66	43.20±6.06	NR	NR	NR	NR	NR	NR	EWL% 29.26 ± 9.43	NR	NR	NR		NR	NR	NR	supplementation of vitamin D with dosage of >800 IU/day is sufficient for prevention of vitamin D deficiency within 12 months after OAGB surgery
Rutledge 2005 [138]	OAGB	2410	38.7 months (range 1.0–74.4).	39 (range 14-78)	361/2049	46±7	37.5	1	24%	54%	29%	66%	%EWL 80; BMI 29 (1 year); weight loss maintained within 10 kg max in 95% of patients (5 years). %EBMIL 80.9	78 (6.7%) minor complications (not specified) 15 (1.3%) leak, 1 (0.1%) bowel obstruction, 2 (0.2%) bleed, 1 (0.1%) respiratory failure, 1 (0.1%) renal failure, 1 (0.1%) anastomotic stricture	Revision rate 2.8% ($n = 33$) (10 inadequate weight loss, 4 intolerance, 10 malnutrition, 1 bowel obstruction, 97 MU, among them 3 required revision, 1 stricture). 110 iron deficiency anemia, 31 patients (1%) developed excessive weight loss and required revision to a gastroplasty (division of the gastrojejunostomy, and gastro-gastrostomy)	4(0.17%), 1 due to narcotic overdose, 2 alcoholic liver disease, 1 uncertain	83%	80%	87%	89%	OAGB is safe in the short and long-term
Milone 2015 [139]	OAGB (SG)	74 (86)	12 months	34.9 ± 6.01 (33.7 ± 5.61)	28/46 (40/46)	47.3 ± 3.88 (46.0 ± 4.77)	NR	NR	28 (37.8%) / 24 (27.9%)	NR	15 (20,2%)/ 12 (13,9%)	32 (43.2%) / 29 (33.7%)	%BMI loss 35	NR	NR	NR	21/28 (16/24)	5/15 (3/12)	NR	NR	Despites some differences at 3e6 post-operative months, during a 12-month follow-up, SG and OAGB showed a similar efficacy in the improvement of lipid profile of obese patients.
Musella 2014 [140]	OAGB	974	1year 795/838 (94,8%); 3years 510/570 (89,4%); 5 years 156 (16%) dropout	39.4	475/499	48 ± 4.58	95 ± 51.6	4.0 ± 1.7	224 (22.9%)	NR	291 (29.8%)	NR	BMI 31.9 ± 4.9, %EWL 70.1 ± 8.4 [1 year], BMI 27.5 ± 2.1, %EWL 81.5 ± 5.0 [3 years], BMI 28.0 ± 2.3, %EWL 77 ± 5.1 [5 years] %EBMIL 86.9	54/974(3 PE,1 stroke, 1 respiratory distress, 10 leaks, 6 of them requiring reoperation, 25 bleeding, 9 of them requiring reoperation, 5 perforations requiring reoperation.	74/818(4 gastric pouch enlargement, 1 trocar site hernia, 3suboptimal weight response with 2 requiring revisional surgery, 14 MU, 4 of them requiring reoperation, 8 bile reflux, 44 iron deficiency anemia.	2(0.2%)	at 5 years 87/103(84.4%)	84/96 (87.5%)	NR	NR	OAGB was shown to be a short, simple, low-risk, effective, and durable bariatric procedure

Table 4 (continued)

Garcia Caballero 2014 [141]	OAGB	83	12 months	NR	NR	42.1 ± 8.2	NR	NR	37/83(44%)	NR	NR	NR	BMI 27 ± 3.3 %EBMIL 88.3	NR	NR	NR	NR	NR	NR	NR	Patients BMI 30-50 behaved homogeneous in BC after surgery while patients BMI >50 behave different. Super obese lose less weight, retained more fat mass, visceral fat, bone mass, and total water.
Carbajo 2017 [142]	OAGB	150	12 months	45.83 ± 10.65	41/109	42.82 ± 6.40	NR	NR	NR	NR	NR	NR	BMI 24.7 ± 4.4, %EWL 71.9 ± 13.4 %EBMIL 101.68	NR	NR	NR	NR	NR	NR	Differences between preoperative levels and those obtained 2 years after OAGB of Tg (123.6 mg/dL ± 56.3 vs. 84.7 mg/dL ± 33.6, p\0.001), TC (194.3 mg/dL ± 43.9 vs. 173.6 mg/dL ± 34.8, p\0.001), HDL (43.6 mg/dL ± 9.8 vs. 61.5 mg/dL ± 12.6, p\0.001) and LDL (124.8 mg/dL ± 36.0 vs. 97.3 mg/dL ± 25.0, p\0.001) were all statistically significant	OAGB leads to substantial and durable WL in morbidly obese patients after a 2-year follow-up. Postoperative lipid profiles significantly improved; these changes translate into theoretical relevant cardiovascular risk benefits.

Revisional surgery

First Author, year [ref]	Primary surgery(n)	Reason for revision (%)	Group (comparative)	*n* = (comp group)	Age	Maximum time point (n = or % follow-up)	M(F)	Baseline weight or BMI before redo (kg/m2)	Duration of surgey (min)	LOS	T2DM	OSAS	HTN	DYSLIPIDEMIA	BMI at 1 year	Early surgical complications	Late surgical complications	Mortality	T2DM remission(n)	HTN remission(n)	OSAS remission(n)	Dyslipidemia remission(n)	Conclusion
Salama 2016 [143]	open VBG(60)	weight recurrence (70), other VBG complications(30)	OAGB(RYGB)	39 (21)	38.7±10	1 year	12(48)	39.8±8.2	145.410 ± 29.18 (185.16 ± 57.78)	4.779 ± 2.24(6.28 ± 0.72)	NR	NR	NR	NR	30.1 ± 5.4 (29.9 ± 5.7)	1 leakage(0)	0(2, internal hernia requiring surgical treatment, anastomotic stenosis in the gastrojejunostomy treated with balloon dilatation)	NR	NR	NR	NR	NR	LMGB is a safe and feasible revisional bariatric surgery after failed VBG and can achieve early good weight loss results similar to that of LRYGB.

Table 4 (continued)

Noun 2018 [144]	LGB(10), LSG(7), LGP(5)	weight recurrence(22)	OAGB	22	39.6 ± 12.2	1 year	10(12)	42.9 ± 6.5	96.4 ± 20.9	2±0.3	3	NR	2	NR	28.5 ± 4 %EBL 81.6 ± 0.17 %TWL 35 ± 0.01	0	0	0	2	2	NR	NR	R-OAGB/MGB should be added to the armamentarium of revisional bariatric procedures considering its technical aspects and the potential advantage on weight loss.
Jamal 2020 [145]	LSG(56)	weight recurrence(56)	OAGB	56	38 ± 10.3 years	19 ± 9.2 months	6(50)	42 ±7.9	NR	NR	5	NR	19	NR	min weight reached 87 ± 22.4 kg after a mean of 21 ± 13.9 months, TWL% 1 year 28.8%, at the last fu 24%	0	2 MU(1 conservative treatment, 1 exploratory lap and omental patch)	0	2	8	NR	NR	OAGB is safe and effective for weight regain post sleeve gastrectomy
Elmahdy 2022 [146]	LSG(40)	weight recurrence(40)	OAGB	40	28.20 ± 7.22	2 years	8(32)	130.34±13.04 kg	80.59 ± 35.42	3.35	7	5	9	12	BMI 34.52±4.26 at 1 year, 29.37±6.95 at 2 years.	4(all treated conservatively)	8(2 anemia, 1 hypocalcemia, 1 hypoalbuminemia, 2 gallstones,2 biliary gastritis)	0	5	5	3	3	LOAGB is an easy, safe and effective revisional bariatric procedure for failed LSG producing satisfactory weight loss and improvement or resolution of co-morbidities with low perioperative complications.

Table 5 Retrospective studies (primary and revisional surgery)

First Author,year [ref]	Group (comparative)	n = (comp group)	Maximum time point (n = or % follow-up)	Age(years)	M/F	Baseline BMI (kg/m2)	Duration of surgey (min)	LOS(days)	T2DM(n)	OSAS(n)	HTN(n)	DYSLIPIDEMIA (n)	Weight loss outcomes	Early surgical complications	Late surgical complications	Mortality(n)	T2DM remission(n)	HTN remission(n)	OSAS remission(n)	dyslipidemia remission(n)	Conclusion
Retrospective Studies																					
Primary surgery																					
Abdallah 2022 [148]	OAGB Fixed (Tailored)	40(40)	12 months	43.8 ± 10.6 (39.3 ± 10.2)	9/31(9/31)	52.2 ± 11.9 (49.7 ± 9)	NR	NR	16(14)	NR	8(11)	10(12)	BMI at 12m: 36.3 (29.5); %EWL at12m: 61.4(80.2); %TWL at12m: 30.7(40.1)	9(2), fixed group: hypoalbuminemia = 6, bile reflux and vomiting = 1, wound infection = 1, bleeding = 1), tailored: bile reflux and vomiting = 1, bleeding = 1).	NR, no distinction among early and late was reported	0(0)	14(13)	6(9)	NR	7(8)	OAGB with a tailored bypass of the proximal one-third of the bowel was associated with greater weight loss and similar improvement in comorbidities as compared to the fixed bypass of the proximal two meters of the intestine. Complications were similar between both variations of OAGB.
Abdallah 2018 [149]	OAGB	30	2 years	33.15 ± 10.17	6/24	47.33 ± 7.97	90 ± 12.6	4.49 ± 1.93	22 (73.3%)	4 (13.3%)	23 (76.6%)	15 (50%)	BMI: 33.7 at1y, 29.65 at2y; EBMIL: data not specified	1 chest infection (3.3%), 1 leak (3.3%)	2 reflux (6.6%)	0	82%	90%		80%	OAGB is effective and safe for obesity and metabolic syndrome, with high remission rates for T2DM, HTN, and dyslipidemia.
Ahuja 2018 [150]	OAGB	102	12 months	45.63 ± 11.12	NR	44.85 ± 9.24	NR	NR	102 (100%)	NR	NR	NR	WL: 115.83 ± 25.64 kg to 82.21 ± 16.80 kg; BMI: 44.85 → 31.65; %EWL: 64.46 ± 19.39	0	0	0	72/102 (70.59%)	NR	NR	NR	A shorter duration of T2DM, a lower HbA1C, and higher levels of C-peptide were significantly associated with a higher chance of T2DM remission
Alkhalifah 2018 [151]	OAGB(LRYGB, LSG)	1731(805,1107)	10 years (43.6% follow-up)	33.8 ± 10.4 (35.4 ± 10.1) (35.2 ± 10.1)	519/1212 (232/573) (278/829)	40.4 ± 7.7 (38.5 ± 6.5) (36.4 ± 7.6)	124.6 ± 38.8 (160.3 ± 62.5) (115.2 ± 35.7)	5.0 ± 4.1 (3.6 ± 1.7) (3.1 ± 3.1)	30.8%(36.3)(18.5)	NR	42.1%(62.9)(53.2)	54.6%(46.4)(52.7)	%WL at 1/5/10y: OAGB 32.7 / 32.2 / 29.1%; %EWL at1/5/10y: 79.0 / 80.4 / 70.3	Overall 7.3% (8.6)(6.5)	Revision 70 (41) (58) Malnutrition 43 (6) (0)	3(2)(1)	at 10 y 77.6%(20.6)(NR)	at 10 y 47.7%(48.1)(NR)	NR	at 10 y 69.4%(75.8) (NR)	OAGB is a safe and durable primary bariatric procedure with overall 29.1% WL at 10 years and satisfactory resolution of obesity-related comorbidities. The need for revision of LSAGB (4.0%) is lower than LRYGB and LSG. The revision is indicated mainly for anemia or protein malnutrition.
Almuhanna 2021 [152]	OAGB	2223	20 years	35.36±1.4	663/1560	40.2611.9	131.9 6 40.1	4.5 6 4.0	739	NR	NR	NR	TWL% at 15 years 29.5 ± 11.9 EWL% 15 years 65.5 ± 33.9	Overall minor 136 Overall major 27(19 leaks, 1 loop stenosis, 1 gastric fistula, 1 hepatic failure, 1 respirator failure, 1 renal failure, 1 stroke)	Revision 113 (5.1%) 51 for malnutrition, 24 for WR, 22 for esophagitis	3	at 5 years 174	NR	NR	NR	OAGB is a safe and durable primary bariatric procedure, with sustained weight loss and a high resolution of T2D up to 20 years post surgery in Taiwan, although malnutrition is a major side effect.
Andrade 2021 [153]	OAGB	150	3 years	49.4 ± 10.5	30/120	44.3 ± 21.3	NR	NR	NR	NR	NR	NR	%EBMIL at3y: 78.4 ± 14.4	NR	NR	NR	NR	NR	NR	NR	OAGB effective for weight loss over 3 years; mean %EBMIL 78.4. Protein intake borderline (~60g/day), adherence to supplementation 70%, dumping syndrome prevalence 24%.
Ansar 2020 [154]	OAGB	1701	12 months (n = 1309)	39 ± 10.2	39 ± 10.2	384/1317	NR	NR	378 (22.2%)	215 (12.6%)	326 (19.2%)	625 (38.4%)	%EWL at 12m: 81.6 ± 18.6; BMI Δ: 16.8 ± 4.4	NR	NR	NR	NR	NR	NR	NR	OAGB-MGB provides considerable weight loss for most patients. Initial lower BMI, absence of diabetes, being volume eater, and higher first month weight loss are independently associated with successful weight loss after 1 year.
Apers 2018 \[155]	OAGB	287	3 years (66%)	44 ± 10.9	42/245	42.7 ± 5.8	50 (25–120)	1–2	67 (23%)	25 (8.7%)	119 (41%)	73 (25.4%)	%EWL at 3y: 83.6%; %TWL: 34.3%; BMI at3y: 28.1	6% (21/287); leak 1.4%; PE 0.7%	Iron deficiency 14%, cholecystectomy 5%, revision 4.8%, ulcer 3.5%	1 (0.3%)	50/67 (74.6%)	56/119 (47.1%)	16/25 (64%)	40/73 (54.1%)	MGB/OAGB associated with excellent 3-year weight loss and comorbidity resolution. Technique refinement reduced biliary reflux and complications; procedure is safe and reversible.

Table 5 (continued)

Baig 2019 [156]	OAGB (SG,RYGB)	1194 (5458, 2965)	5 years (17%)	43.07 ± 11.42	548/646	45.08 ± 8.82	NR	NR	NR	NR	NR	NR	%EWL at 5 y70.37(57.28, 60.85) %TWL 5 years 32.6(24,27.8) % WR at 5 years 1.98(18.6,10.67)	NR	Severe hypoalbuminemia: 5.9%; Hb< 10 g/dL: 13.9%	NR	NR	NR	NR	NR	OAGB had lowest weight regain vs SG and RYGB but highest incidence of anemia and hypoalbuminemia. Need for standardised WR definitions and nutritional support.
Barzin 2022 [158]	OAGB(SG)	676(1942)	3 years (60.9% SG, 67.9% OAGB)	39.7 ± 10.8 (39.5 ± 11.9)	135/541 (505/1437)	45.4 ± 6.3 (44.2 ± 5.6)	NR	NR	224(411)	NR	186(532)	296(882)	EWL% at 3y: 75.4(66.1)	NR	Severe anemia at 3 years 0(1)	NR	NR	NR	NR	NR	anemia and iron deficiency incidence increased over a 3-year follow-up after SG and OAGB procedures, with a more significant increase in the individuals undergoing OAGB.
Barzin 2023 [157]	OAGB(SG)	193(324)	1 year (100%)	41.3 ± 10.5 (39.0 ± 10.9)	26/167(64/260)	44.9 ± 5.2 (44.1 ± 5.1)	NR	NR	68(70)	NR	66(96)	101(181)	EWL % 79.8 ± 15.0(77.7 ± 16.9) TWL % 34.4 ± 6.1(32.6 ± 6.3)	NR	SHPT: 17.1% OAGB vs 9.9% SG	NR	NR	NR	NR	NR	incidence of postsurgery SHPT within 1 year of follow-up was significantly higher in patients undergoing OAGB than those treated with SG.
Boyle 2019 [159]	OAGB-200 (OAGB-150)	225(118)	18–24 months (86.1%)	45.7 (46.8)	148/77 (84/34)	49.76 (47.83)	NR	NR	63/26	NR	83/49	NR	%EWL: 75% (OAGB-200), 74% (OAGB-150); %TWL: 36.1% vs 34%	2 reoperations in the OAGB-200 group (one for small bowel obstruction caused by a band in the pelvis and one for gastric remnant obstruction)	MU 12(8)	6 unrelated late deaths in the OAGB-200 cohort	29(12)	28(21)	NR	NR	OAGB performed with a BPL of 150 cm delivers weight loss outcomes that are not significantly inferior to those seen with a BPL of 200 cm.
Castro 2020 [161]	OAGB (RYGB,SG)	123(152,83)	5 years (84.8%)	42.4 ± 11 (44.1 ± 11.6) (43.5 ± 10.2) 42.4 ± 11 (44.1 ± 11.6) (43.5 ± 10.2) 42.4 ± 11 (44.1 ± 11.6) (43.5 ± 10.2)	33/90 (32/120) (20/63)33/90 (32/120) (20/63)33/90 (32/120) (20/63)	43.8 ± 9.2 (43.6 ± 8.9) (45.2 ± 9.2) 43.8 ± 9.2 (43.6 ± 8.9) (45.2 ± 9.2) 43.8 ± 9.2 (43.6 ± 8.9) (45.2 ± 9.2)	NR	NR	All patients had T2DM (100%)	NR	81(95)53)	76(96)(49)	EBMIL% 5 years 97.6 ± 9.9 (72.5 ± 16.4) (68.8 ± 18.6 72.5)EBMIL% 5 years 97.6 ± 9.9 (72.5 ± 16.4) (68.8 ± 18.6 72.5) EBMIL% 5 years 97.6 ± 9.9 (72.5 ± 16.4) (68.8 ± 18.6 72.5)	3(2)(2) oagb: 2 bleedings, 1 anasomotic leak	NR	NR	at 5 years 110(122) (63)	at 5 years 65(69) (72)	NR	at 5 years76 (67)(13)	OAGB showed best long-term outcomes for weight loss, T2D and DL remission; similar nutritional safety to RYGB and SG; may be gold standard if follow-up ensured.
Carbajo 2014 [160]	OAGB	415	12 months	NR	NR	NR	NR	NR	79 (19%) (47 prediabetics, 32 diabetics)	NR	NR	NR	Excellent weight loss with %EBMIL > 65% at 12 months	NR	NR	NR	Complete remission in prediabetics and diabetics at 12 months	NR	NR	NR	OAGB is an effective surgical technique for weight loss in pre-diabetic patients as well as in diabetic patients after one year control.
Cayci 2022 [162]	OAGB (OAGB Plus), with additional resection of fundus and corpusOAGB (OAGB Plus), with additional resection of fundus and corpusOAGB (OAGB Plus), with additional resection of fundus and corpus	49(34)	12 months	44.1 ± 10.5 (44.03 ± 9.6) 44.1 ± 10.5 (44.03 ± 9.6) 44.1 ± 10.5 (44.03 ± 9.6)	7/42(5/29)	44.3 (45.1)	113.8 ± 21.8 (137.2 ± 54.8)	5.3 ± 1.5 (6.9 ± 3.1)	20(18)	NR	20(13)	NR	EBL% at12m: 83.0 (89.2); EWL%: 68.4 (73.3) TWL% 36.7(38.3)	2(2)	0	0	16(10)	16(11)	NR	NR	The addition of resection of the gastric fundus and corpus to an OAGB has no impact on postoperative weight loss or metabolic outcomes.
Clapp 2023 [163]	OAGB (SADI-S)	1068(694)	30 days	43.7 ± 12.2 (42.2 ± 10.8) 43.7 ± 12.2 (42.2 ± 10.8) 43.7 ± 12.2 (42.2 ± 10.8)	181/887 (142/552)	45.3 ± 7.1 (50.6 ± 9.1)	93.3 ± 52.7 (129.8 ± 54.0)	NR	278(200)	446(314)	480(332)	253(147)	NR	readmission 20(26) reoperation 18(17) reintervention 10(4)	NR	1(1) 30 days	NR	NR	NR	NR	OAGB associated with lower 30-day complication and readmission rates than SADI-S; SADI-S used more in patients with higher BMI and immunosuppression.

Table 5 (continued)

Dayan 2023 [164]	OAGB (SG)	41(83)	63.2 ± 19.0 months (OAGB), 82.6 ± 30.5 months (SG) 63.2 ± 19.0 months (OAGB), 82.6 ± 30.5 months (SG) 63.2 ± 19.0 months (OAGB), 82.6 ± 30.5 months (SG)	67.6 ± 2.8 (67.6 ± 2.6)67.6 ± 2.8 (67.6 ± 2.6) 67.6 ± 2.8 (67.6 ± 2.6)	21/40(39/44)	41.8 ± 7.8 (43.3 ± 5.9)	NR	2.6 ± 1.7 (4.1 ± 1.9)	16(48)	6(23)	18(62)	16(41)	EWl% 67.2% ± 22.3 (45.8% ± 18.0); TWL% 30.7 ± 10.4 (1.9% ± 8.1); EWL >50% 80.6 (43.2)	3(6) 1(0) leak, 0(3) readmission 1(3) reoperation 1(3) bleeding		0(1)	13(11)	11(16)	6(12)	11(19)	OAGB in the elderly is safe and achieves excellent sustainable weight reduction with resolution of obesity-associated medical problems. OAGB seems to be superior to SG, as it results in better weight reduction and resolution of T2D and HTN. It is also non-inferior to SG in terms of safety.
De Bandt,2022 [165]	OAGB (RYGB)	16(13)	2 years	50.3 ± 2.2 (O44.1 ± 2.9)50.3 ± 2.2 (O44.1 ± 2.9)50.3 ± 2.2 (O44.1 ± 2.9)	NR	45.1 ± 1.4 (44.8 ± 1.7)	NR	NR	3(3)	NR	NR	NR	WL: -33.9% (OAGB), -31.2% (RYGB); EBMIL: -78.4% vs -74.4%	NR	NR	0	2(3)	NR	NR	NR	OAGB and RYGB induce similar gut hormone responses and weight loss. OAGB shows lower insulin resistance and postprandial insulin/C-peptide levels.
Docimo 2022 [166]	OAGB (RYGB)	279(279)	30 days	46.1 ± 11.3 (46.2 ± 11.7) 46.1 ± 11.3 (46.2 ± 11.7) 46.1 ± 11.3 (46.2 ± 11.7)	51/228 (49/230)51/228 (49/230)51/228 (49/230)	44.5 ± 7.6 (both)	NR	NR	183(172)	150(150)	121(125)	200(200)	NR	readmission 15(9) reoperation 9(6) reintervention 8(6) leak 1(1) bleeding 1(2)		30 days 1(1)	NR	NR	NR	NR	OAGB has a similar early safety profile compared to RYGB and perioperative risks of OAGB should not be of a concern regarding its adoption. Conversely, OAGB does not seem to be associated with an improved safety profile over RYGB.
Hussain 2019 [167]	OAGB	519	3 years (mean 2.5)	44 ± 11.08	162/357	48 ± 8.01	NR	2	124 (23.51%)	42 (7.9%)	100 (19%)	NR	EWL: 89% at1y, 81% at2y, 77% at3y	2 bleedings	21 (3.98%), 8 stomal ulcers, 4 loop obstructions, 2 bleeding, 2 liver dysfunction, 2 diarrhea, 1 bile reflux converted to RYGB, 1 excessive WL requiring shortening of the BPL	0	83% at1y, 70% at2y and 3y	61% at1y, 58% at2y and 3y	100% at1y, 99% at2y and 3y	60% at1y, 55 % at2y and 3y	OAGB/MGB is safe and effective for metabolic syndrome and obesity. High EWL and comorbidity remission with no mortality.
Jamal 2019 [168]	OAGB	42	2 years	37.3 ± 10.8	33/66 (23/68) (22/52) +G2533/66 (23/68) (22/52)+G2533/66 (23/68) (22/52)+G25	47.6 ± 9.1	107 ± 21.3	2.5 ± 0.53	15 (35.7%)	NR	9 (21.4%)	NR	BMI: 30.5 ± 7.4 at1y, 27.1 ± 5.1 at2y; EWL%: 77.2 ± 22.7% at1y, 89.8 ± 19.6% at2y	1 bowel strangulation (2.4%)	7 iron deficiency anemia (16.6%)	0	12	NR	NR	NR	OAGB is technically safe and effective on weight loss and remission of T2DM with minimal morbidity and mortality
Jedamzik 2019 [169]	OAGB (150cm vs 200cm vs 250cm)	11(93)(51)	3 years	45	44/111	45.4 ±6.1	NR	NR	42	15	78	NR	EWL% 63.2 (82.2) (73.4)	NR	NR	0	NR	NR	NR	NR	OAGB with BPL > 200 cm shows more deficiencies without weight loss benefit. No severe protein malnutrition observed. Close follow-up is essential.
Jimenez 2020 [170]	OAGB	405	12 months	44.39 ± 11.49	126 / 279	39.76 ± 6.65	NR	NR	NR	NR	NR	NR	%EBMIL: 119.96 ± 35.47; %TWL: 38.79 ± 7.68 at12m; BMI: 24.52 ± 3.76 at12m	NR	NR	NR	NR	NR	NR	NR	OAGB results in effective weight loss and significant changes in body composition after 12 months. Improvements observed across FM, FFM, BM, MM, and water content.
Jung 2022 [171]	OAGB	418	30 days	46.9 ± 11.4	85/351	44 ±0.8	89.4 ± 58.6	1	147	198	240	126	NR	overall 31, readmission 19 reintervention 11 reoperation 10	NR	1	NR	NR	NR	NR	OAGB is rarely used in the US (< 0.05%), but shows similar safety profile to international data. More research is needed for broader approval.

Table 5 (continued)

Kansou 2016 [172]	OAGB (SG)	136(136)	12 months	41.2 ± 11.3 (41.2 ± 12.3) 41.2 ± 11.3 (41.2 ± 12.3) 41.2 ± 11.3 (41.2 ± 12.3)	9/127(11/125)	42.8 ± 5.0 (43.4 ± 6.5)	NR	3	27(21)	40(29)	42(39)	NR	TWL% 38.2 ± 8.4 (34.3 ± 8.4) EWL% 79.3 ± 17.8 (71.4 ± 19.0)	15(15) leaks 7(6)	0(33) 10 MU 23 stenosis at the GJ	0	25(19)	34(30)	37(22)	NR	OAGB seems to have better weight loss at one year compared to LSG with higher complications.
Karimi 2018 [173]	OAGB	195	13 months	41.34 ± 11.03	33/166	44.54	NR	NR	33	25	35	77	%EBL > 100 24% at 12 months	NR	NR	NR	NR	NR	NR	NR	OAGB is an appropriate and safe technique to resolveobesity.
Kermansaravi 2020 [174]	OAGB tailored BPL 150-179(180-200)(201-220)	36(601)(15)	12 months	37	121/532	44.35	NR	NR	111	17	106	250	TWL% 36.92 EWL%84.94	2 leaks and 8 bleeding in the 180-200 BPL group, 1 bleeding in the > 200 BPL group	0(24)(3) Vomiting 0(24)(1) diarrhea	0	NR	NR	NR	NR	Tailoring BPL in OAGB/MGB based on patient's age and preoperative BMI seems to have acceptable results.
Khalaj 2020 [175]	RYGB(OAGB 160 BPL)(OAGB 200 BPL)	145(383)(272)	12 months	38.0 ± 10.9 (40.2 ± 10.7) (38.9 ± 10.7) 38.0 ± 10.9 (40.2 ± 10.7) (38.9 ± 10.7) 38.0 ± 10.9 (40.2 ± 10.7) (38.9 ± 10.7)	39/116 (57/326) (41/231)39/116 (57/326) (41/231) 39/116 (57/326) (41/231)	44.5 ± 5.8 (45.6 ± 6.3) (46.7 ± 6.4)	100.2 ± 36.1 (69.2 ± 21.3) 74.4 ± 14.8)	2(2)(2)	51 (133)(110)	NR	63(115)(91)	131(322)(244)	TWL% 30.9 ± 8.9 (33.8 ± 6.7) (35.3 ± 6.9) EWL% 73.1 ± 23.2 (78.1 ± 18.2) (79.3 ± 17.1)	0 MU, 2(18)(10) bleeding requiring transfusion 0(5)(4) reoperation : 1 peritonitis due to leak in the 160 BPL group, 2 peritonitis due to leak in the 200 BPL group, 1 intestinal obstruction in the OAGB 160 BPL	7 PCM requiring revision in the OAGB 200 BPL group	1 30 days in the OAGB 160 BPL unrelated to surgery, 2 late death, 1 related to PCM in the OAGB 200 BPL, 1 unrelated to surgery in the OAGB 160 BPL	37(94)(89)	40/76)(68)	NR	54(113)(84)	After 1 year, OAGB with a 160-cm BPL was as effective as OAGB with a 200-cm BPL and RYGB, but safer than OAGB-200.
Komaei 2019 [176]	OAGB Fixed(Tailored)	32(32)	12 months	42.3 ± 9.7 (44.4 ± 9.1) 42.3 ± 9.7 (44.4 ± 9.1)	6/26(7/25)	43.3 ± 4.4 (45.0 ± 6.9)	NR	NR	NR	NR	NR	NR	TWL% 33.4 ± 7.9(33.3 ± 6.6) EWL% 66.2 ± 17.1(63.3 ± 13.7)	NR	hypoalbuminemia 31.2% (9.4%), Total protein deficiency 21.9% (12.5%), 3 readmission for diarrhean in the OAGB 200 BPL, 0 severe malnutrition requiring revisional surgery	0	NR	NR	NR	NR	Tailoring BPL length by bypassing about 40% of the SBL seems to be safe and effective. According to preliminary results of this study, a tailored BPL length relative to SBL is even likely to be superior to the fixed 200-cm BPL as it is associated with less nutritional deficiencies while providing similar weight loss results
Kular 2014 [178]	OAGB	1054	6 years (84% follow-up)	38.4 ± 9.6	342/712	43.2 ± 7.4	52 ± 18.5	2.5 ± 1.3	674 (64%)	341 (32.4%)	758 (72%)	653 (62%)	EWL%: 85% at1yr, 91%at2y, 85%at6y; BMI: 26.2 at6y	49 minor (4.6%), 14 major (1.3%),2 leaks (0.2%)	Anemia (7.6%), bile reflux (2.0%), marginal ulcers (0.6%)	30 days 2	93.2%	74.8%	97%	91%	OAGB (MGB) provides excellent long-term weight loss and comorbidity resolution with low complication rates and good patient satisfaction.
Kular 2016 [177]	OAGB	128	7 years (84% follow-up)	41.6 ± 10.2	46/82	33.4 ± 3.3	49.0 ± 13.2	2.2 ± 1.0	128	NR	NR	NR	EWL%: 94% at1yr, 78.5% at7yr; BMI: 24.9 at7yr	6 (4 minor, 2 major) 1 bleeding with shock, 1 DKA	12(2 MU, 5 anemia, 1 low albumin, 1 bile reflux, 3 excessive weight loss)	0	53% complete at7yr, 86% HbA1c < 7%	NR	NR	NR	OAGB provides good long-term glycemic control in T2DM patients with BMI < 35. Earlier intervention gives better results.
Liagre 2020 [179]	OAGB with 150 cm BPL	115	8 years (69% follow-up)	37.2 ± 11.7	14/101	43.2 ± 5.8	NR	1.8 ± 0.6	14	9	20	33	%TWL: 35%, %EWL: 85% at 8 years	2 (1.7%) - abscess, pneumonia	GERD: 27%, 6 conversions to RYGB	1	4/11 (36.4%)	3/14 (21.4%)	4/7 (57.1%)	14/25 (56%)	OAGB with 150-cm BPL is effective for long-term weight loss and comorbidity resolution with minimal protein-calorie malnutrition but notable fat-soluble vitamin deficiencies.

Table 5 (continued)

Liakh2022 [180]	OAGB(LSG)	15(15)	3 months	43.4 ± 7.5 37.3 ± 10.0)	2/13(3/12)	36.8 ± 2.4 (41.6 ± 8.7)	NR	NR	NR	NR	NR	NR	BMI ↓ from 36.8 to 29.6 (OAGB); from 41.6 to 35.1 (LSG)	NR	NR	0	NR	NR	NR	NR	OAGB leads to a greater reduction in serum FFA and improved insulin sensitivity compared to LSG after 3 months, potentially contributing to glucose homeostasis.
Lo 2020 [181]	OAGB(OAGB) (RYGB)	47(26)(32)	12 months	39.4 ± 11. (42.2 ± 12.7) (34.2 ± 9.4) 39.4 ± 11. (42.2 ± 12.7) (34.2 ± 9.4)	23/2(19/7)(13/19)	41.8 ± 7.6 (43.3 ± 5.8) (37.7 ± 3.1)	153.1 ± 42.2 (118.2 ± 23.5) (115.8 ± 30.5)	3.4 ± 0.8 (3.0 ± 0.3) (2.9 ± 0.2)	14(13)(9)	NR	21(16)(7)	25(16)(19)	Group 1 %EWL 92.9 ± 21.0, %TWL 36.3 ± 7.8; Group 2 : %EWL 77.2 ± 13.7, %TWL 30.9 ± 5.5; group 3 %EWL 85.5 ± 12.7, %TWL 28.3 ± 4.7	3(2)(0) readmission 2(0)(0)	8(17.0) 3(11.5) 2 (6.3) MU 4(2)(2) anemia 2(1)(0) malnutrition 1(0)(0)	0	NR	NR	NR	NR	the early emergence of a learning curve effect for OAGB-MGB, and the proficiency acquired can be transferred to subsequent practice for RYGB in terms of acceptable operation time and length of stay without an increase in complications
Madhok 2017 [182]	OAGB(RYGB)	200(200)	24 months (60 MGB, 55 RYGB)	45 ± 11.4	61/139	49 ± 7.3 (48 ± 6.7)	NR	NR	NR	NR	NR	NR	%TWL significantly higher in MGB vs RYGB at all time points	NR	NR	NR	NR	NR	NR	NR	OAGB and RYGB both increase anaemia, significant only for MGB. Trends of lower iron and folate in MGB, but similar haematinic levels overall.
Mahdy 2021 [183]	LSG(OAGB)(SASI)	99(91)(74)	12 months	29.6 ± 9.3 (38.4 ± 11.6) (39 ± 9.1) 29.6 ± 9.3 (38.4 ± 11.6) (39 ± 9.1)	33/66 (23/68) (22/52)33/66 (23/68) (22/52)	43.5 ± 5.5 (44.8 ± 7.7) (42.1 ± 14.5)	NR	NR	7(35)(43)	2(4)(2)	14(25)(24)	7(14)(13)	EWL% 72.5 ± 33.9 (65.9 ± 25.1) (87.6 ± 20.3) TWL% 31.6 ± 8.5 (29.1 ± 9.8) 36.1 ± 8.1)	0(1)(3) 1 : pouch gangrene and perforation 3: 2 bleeding and 1 occlusion readmission 1(2)(3) Abdominal pain Pouch gangrene, fever Abdominal pain, acute pancreatitis, obstruction	2(9)(11) hypoalbuminemia 2(9)(9)	0	5(30)(42)	9(21)(18)	2(4)(2) 100%	4(11)(13)	SASI bypass was associated with more reduction in body weight and BMI, higher %TWL and %EWL, better improvement in T2DM, and more long-term nutritional complications than SG and OAGB
Mahmoudieh 2021 [184]	RYGB(OAGB)	300(300)	12 months (100%)	40.15 ± 8.95 (39.69 ± 11.06) 40.15 ± 8.95 (39.69 ± 11.06)	48/252 (48/252)48/252 (48/252)	43.68 ± 3.85 (44.52 ± 6.43)	NR	NR	38(39)	NR	49(48)	174(175)	LRYGB: ΔBMI = -13.65, EBMIL = 73.2%; LOAGB: ΔBMI = -14.63, EBMIL = 74.55%	NR	NR	NR	31(19)	33(43)	NR	111(100)	Both LRYGB and LOAGB improved kidney function (eGFR and ACR) after 1 year. T2DM remission was higher in LRYGB, while HTN remission was higher in LOAGB. No significant difference in kidney outcomes between groups after adjusting for confounders.
Markopoulos 2022 [185]	OAGB(RYGB) (BPD)	34(34)(34)	6 years	37.7(38.3)(36.1)	5/29(5/29)(5/29)	46.1(46.2)(46.7)	NR	NR	6(6)(6)	NR	10(7)(7)	12(11)(12)	EWL% 6 y 68 (63.8)(76.3)	NR	0%	0	100% for all groups	100% for all groups	NR	12(9)(10)	OAGB offered mid-term results comparable to BPD while being safe and with minimal impact on the patient's nutritional state. It is an effective procedure for treating morbid obesity, which results in sustained weight loss and a high rate of resolution of comorbidities.
Mocanu 2023 [186]	OAGB (RYGB)	1344 (46040)	30 days (100%)	44.3 ± 12.1 (45.4 ± 11.5) 44.3 ± 12.1 (45.4 ± 11.5)	235/1109 (7442/38598) 235/1109 (7442/38598)	45.2 ± 7.6 (44.6 ± 7.9)	101 ± 53.7 (131.5 ± 63.3)	NR	395/1276	508 (18935)	637 (21868)	357 (11996)	NR	Reoperation 22(1207) Reintervention 17(888) readmission 30(2679) leak 3(210) serious complications 63(3858)	NR	2 (60) 30 days	NR	NR	NR	NR	OAGB associated with reduced 30-day serious complications, reoperation, and readmission vs RYGB; no mortality difference.
Moradi 2022 [187]	OAGB (RYGB) (LSG)	675(475)(201)	3 years	47.3 ± 10.2 (47.2 ± 9.6) (47.5 ± 10.9)	153/522 (103/372) (40/161)153/522 (103/372) (40/161)	44.6 ± 7.0 (43.7 ± 6.7) (43.8 ± 6.9)	NR	NR	100% in all groups	200(166)(69)	278(207)(84)	333(212)(80)	BMI 3Y 30.6 ± 4.6 (31.3 ± 4.9) (30.8 ± 4.7)	NR	NR	0	at 3y 336(247)(94)	NR	NR	NR	The remission of T2DM after RYGB, SG, and OAGB surgery is dependent on various preoperative factors. Patients with younger age, shorter duration of T2DM, lower preoperative HbA1c and FBS, higher BMI, who were not on insulin therapy, and not having a family history of obesity were the best candidates to achieve a prolonged diabetes remission

Table 5 (continued)

Najjari 2021 [188]	OAGB(SG)	151(130)	6 months	43.4 ± 11.0 (45.2 ± 10.5) 43.4 ± 11.0 (45.2 ± 10.5)	24/127(13/117)	OAGB: 43.4 ± 11.0 (subclinical hypotyroidism), 43.4 ± 10.4 (clinical hypotyroidism); SG: 45.2 ± 10.5 (subclinical), 43.9 ± 10.2 (clinical)	NR	NR	NR	NR	NR	NR	OAGB: TWL 28.5%, EWL 58.8% (subclinical); TWL 31.4%, EWL 60.1% (clinical)	NR	NR	NR	NR	NR	NR	NR	OAGB and SG both significantly reduced TSH levels at 6 months in hypothyroid patients; no significant difference in TSH or T4 change between procedures.
Navarrete 2018 [189]	OAGB(RYGB)	100(100)	12 months	40.46 ± 12.4 (39.43 ± 10.33) 40.46 ± 12.4 (39.43 ± 10.33)	36/64(46/54)	44.8 ± 12.06 (45.29 ± 8.82)	69.01 ± 4.62 (88.98 ± 3.44)	2	19(18)	NR	26(25)	NR	EWL% at 12m: 89.4(85.9)	OAGB: 2 minor, 2 major; RYGB: 6 minor, 1 major	OAGB: 3 (hernia, malnutrition, bile reflux); RYGB: 4 internal hernia	0(0)	89.5%(88.8%)	80.7%(80%)	NR	NR	OAGB and RYGB both effective for weight loss and comorbidity resolution; OAGB had shorter surgical time and similar safety profile.
Peraglie 2016 [190]	OAGB	88	6 years	64 (60–74)	33/55	43 (33–61)	70 (43–173)	1.2 (1–3).	40	NR	67	36	EWL% at 6 y 72	4.5 % (all minor), 0 leaks 1.2% early readmission	0	0	84% at 1 year	76% at 1 year	NR	NR	OAGB can be safely performed with good weight loss in patients C60 years old, despite numerous comorbidities and previous abdominal operations.
Piazza 2011 [191]	OAGB	197	3 years	37.9 (20–55)	50/147	52.9	120(90-170)	5		NR	NR	NR	BMI at 3 y 28.3 ± 2.6 EWL% at 2 y 80%	13(3 MU, 2 severe esophagitis, 2 PE, 6 melena)	NR	1	90%	80%	90%	70%	Preliminary results have shown that OAGB is a procedure relatively simple and easily reversible with good weight loss and reduction of comorbidities.
Pizza 2020 [192]	OAGB	241	27 ± 11 months	30.6 ± 14	87/154	44.23 ± 6.32	NR	4	21 (7.9%)	Not reported	166 (68.9%)	NR	BMI: 24.9 ± 11.7; %EWL: 72.1 ± 23.5; %TWL: 42.2 ± 8.2	10	3 MU; remnant gastritis (38.7%); bile reflux (6.6%)	0	NR	NR	NR	NR	OAGB is effective and safe for weight loss; notable complications include remnant gastritis and bile reflux.
Plamper 2023 [193]	OAGB(LSG)	911(241)	5 years	42 ± 11 (44 ± 11)	217 /694(82/249)	50.97 ± 7.31 (54.21 ± 10.07)	77 ± 19 (94 ± 31)	4 ± 3 (7 ± 13)	319(98)	552(147)	560(180)	NR	Lower BMI and better weight loss outcomes with OAGB at 3 y	147(52) grade IV-V 16(9)	435(155) : 11(8) leakages, 70(4) MU, 26(3) hemorrages, IWL 58(62), reflux 76(43), nutritional deficiencies 182(29)	1 (SG)	94.6% (85.2%)	85.4% (81.9%)	88.8% (78.8%)	NR	OAGB shows better weight loss and comorbidity remission vs SG, with similar early complications and distinct late complication profiles.
Poljo 2021 [194]	SG (RYGB)(OAGB)	50(53)(77)	20.0 ± 11.4 (127/180 patients, 70.6%)	42.5 ± 10.2 (32.0 ± 9.3) (45.0 ± 9.1)	21/29 (12/41) (17/60)	46.7 ± 8.0 (43.8 ± 4.9) (42.1 ± 5.1)	66.5 ± 25.3, (121.0 ± 28.9) (99.0 ± 31.5)	NR	9(7)(17)	NR	NR	NR	EWL (%): SG: 64.2 ± 27.8, RYGB: 73.4 ± 24.6, OAGB: 81.5 ± 23.6	SG: 2 (bleeding), RYGB: 4 (2 ulcer, hernia, bleeding), OAGB: 1 (leak)	RYGB: 1 stapler failure, OAGB: 3 ulcers	0	NR	NR	NR	NR	SG showed significantly lower dumping syndrome incidence (15.6%) vs RYGB (56.4%) and OAGB (42.9%). SG also had best satisfaction and lowest complication rate.
Qin 2022 [195]	OAGB	100	12 months	33.3 ± 8.8	23/77	35.5 ± 6.1	128.5 ± 29.8	2.0 ± 0.5	20 (20%)	NR	30%	54%	BMI at 12m 24.2 ± 2.4, %EWL 85.4 ± 13.2 %TWL 32.6 ± 11.2	1 minor	1 ulcer	0	China: 100%, Taiwan: 95.9%	NR	NR	NR	OAGB in situ is effective and safe; similar outcomes in weight loss and T2DM remission between China and Taiwan; very low complications.
Rheinwalt 2020 [122]	OAGB-MGB (RYGB)	324(288)	3 years (42.86% follow-up OAGB, 50% RYGB)	42.51 ± 11.36 (41.40 ± 10.04)	82/242 (58/230)	53.75 ± 6.51 (44.53 ± 3.65)	80.28 ± 20.31 (103.36 ± 29.69)	4(4)	121(87)	191(128)	222(173)	241(194)	TWL% at 3 y 36.18(33.8)	intraoperative: 15(25) leakage 4(5) bleeding 3(2) relaparoscopy 2(2)	65(113): reflux 11(2), malnutrition 13(7), dumping 11(19), IH surgery 1(11), MU 10(16), IWL 13(16), anastomotic stenosis 6(42)	0(0)	15(16)	21(22)	22(17)	NR	Comparable and excellent weight loss and remission of comorbidities in OAGB-MGB and RYGB. OAGB-MGB shows lower dumping and stenosis rates, shorter surgery time.
Ruiz-Mar 2019 [196]	OAGB	51	12 months	43.8 ± 9.3	8/43	55.8 ± 12	NR	1	33 (64.7%)	NR	22 (43.1%)	26 (51%)	65% EWL at 12 months; BMI dropped from 48.4 ± 1.3 to 31 ± 4.4	0 mortality, 0 leaks, 0 bleeding within 30 days	2 biliary reflux (3.9%), 2 gastrojejunal ulcers (3.9%)	0	57%	37%	NR	43%	OAGB is commonly performed and safe; short term results are promising, long-term follow-up needed for complications and nutrition.

Table 5 (continued)

Salvi 2020 [197]	BSG (OAGB)	68(55)	6 years	40.51 ± 12.6 (45.45 ± 10.4)	30/33(33/22)	44.60 ± 8.3 (46.02 ± 9.4)	49.41 ± 5.4 (29.91 ± 4.2)	5.6 ± 1.0 (3.5 ± 0.9)	30(15)	2(53)	25(34)	NR	EWL% 6 y 84(79)	Minor complications resolved during hospital stay; no deaths or major complications	NR	0	75.7% (86.6%)	64.0% (85.3%)	50% (66.0%)	NR	Both BSG and OAGB/MGB show good to excellent long-term weight loss and comorbidity remission. OAGB/MGB has higher nutrient deficiency risk.
Sam 2021 [198]	OAGB 150 (OAGB 200)	171(234)	2 years (83.4%)	46.44 ± 10.92 (46.01 ± 11.07)	50/121(80/154)	47.76 ± 7.06(49.91 ± 8.71)	NR	NR	NR	NR	NR	NR	EWL% 2 y 75.02 ± 21.35 (76.46 ± 20.10) TWL% 2 y 34.12 ± 9.49 (36.15 ± 9.19)	NR	NR	NR	NR	NR	NR	NR	Overall safety of OAGB with regard to its effect on LFTs, with no remarkable difference between OAGB 150 and OAGB 200.
Shirazi 2022 [199]	OAGB(SG)	60(60)	12 months	44.0 ± 11.0 (39.7 ± 15.5)	22/38 (20/40)	43.3 ± 6.7 (42.7 ± 4.7)	NR	NR	NR	NR	NR	NR	EWL% 87.6(84.9) TWL% 35.4(33.5)	NR	NR	NR	NR	NR	NR	NR	Nutritional deficiencies post OAGB are comparable to SG with proper supplementation and follow-up.
Singhal 2021 [200]	SG, OAGB, RYGB	3983 (702)(2085)	30 days	30(40)(43)	1100/2883 (206/496) (496/1589)	41.91 (43.11) (41.87)	NR	NR	649 (229) (484)	975 (229)(517)	1101(272)(720)	763 (224)(476)	NR	233(53)(166)	NR	4(3)(0)	NR	NR	NR	NR	no significant difference in 30-day morbidity and mortality of SG, OAGB, and RYGB in propensity-matched cohorts.
Slagter 2021 [201]	OAGB (150, 180, 200 cm BP-limb)	632 (172, 388, 72)	3 years (74% follow-up)	48 ± 11	17/525	42 ± 4	NR	NR	31(80)(15)	NR	58(130)(21)	NR	TWL% 29 (31)(34) EWL% 83 (77)(75)	NR	Ulcers 3.6%, internal herniation 0.6%, cholelithiasis 5%	2 not related to surgery	21(59)(13)	28(69)(10)	NR	NR	Attained BMI remained higher in spite of tailoring BP-limb length according to baseline BMI with no differences in remission rates of comorbidities
Slagter 2021 [202]	OAGB without antireflux suture (OAGB with antireflux suture)	289(414)	3 years	48 ± 11 (48 ± 11)	56/233(71/343)	42(43)	NR	NR	57(90)	98(140)	NR	NR	TWL% at 3 y 31(31) EWL% 75(76)	NR	NR	NR	42(67)	48(68)	NR	NR	anti-reflux suture might be a valuable addition to the OAGB procedure because it leads to less often conversion to RYGB for reflux
Sohrabi Maralani 2021 [203]	OAGB	805	5 years (50% follow-up)	39.7 ± 11.5	203/602	44.8 ± 6.1	NR	2	198 (24.6%)	NR	141 (17.5%)	287 (35.7%)	EWL 85.7% at 1 year, 76% at 5 years	9 (1.1%) including 1 anastomosis leak, 4 renal complications	202 (25.1%) 2 malnutrition requiring revision, 2 reflux requiring RYGB, 3 MU	3, 1 procedure related(leak)	128 (64.6%)	89 (63.1%)	NR	149 (51.9%)	Hand-sewn anastomosis could represent an efficient and safe technique in the management of patients undergoing OAGB surgery with acceptable outcomes and rare adverse complications.
Soong 2021 [9]	SG, RYGB, OAGB	498 (190, 62, 246)	5 years (52% follow-up)	33.0 ± 10.0 (30.5 ± 9.6) (31.9±9.7)	66/124 (32/30) (111/135)	55.9 ± 5.5 (55.5 ± 5.2) (56.2 ± 5.8)	133.7 ± 36.0 (171.5 ± 35.2) (140.1 ± 38.5)	3.7 ± 3.1 (4.2 ± 1.8) (4.8 ± 2.6)	66(36)(117)	NR	NR	NR	%TWL at 5 years: SG 35.1%, RYGB 37.2%, OAGB 40.8%	minor: 5(8)(19) major 1(3)(2)	revision: 5(5)(17) indication for revision in the OAGB group: 2 MU, 1 reflux esophagitis, 3 anemia, 3 bile reflux, 8 protein malnutrition	1 in the RYGB group	100% in all groups	20.4% (33.9%) (34.8%)	21.6% (39.7%) (70.3%)	26.7% 53.1% 65.4%	SG is an effective and durable primary bariatric procedure for the treatment of super obesity and metabolic disorders. OAGB had a similar operation risk to SG but resulted in a better weight loss than SG.
Soong 2021 [204]	OAGB	134	5 years (100% follow-up)	40.0 ± 12.9	45/89	39.5 ± 7.9	NR	NR	134	NR	NR	NR	TWL at 5 year29.2 ± 10.6%; BMI 27.6 ± 5.3 kg/m2	NR	NR	NR	102 (76.1%) at 1 year, 86 (64.2%) at 5 years	NR	NR	NR	OAGB is effective for T2DM remission with durable weight loss, but 15.7% T2DM recurrence at 5 years.
Soprani 2022 [205]	OAGB-Nissen	22	23 ± 15 months	48 ± 10	1/21	40 ± 14	60 ± 20	2 ± 1	1 (4.5%)	5 (22.7%)	3 (13.6%)	NR	%TWL 49.1 ± 9.3, %EWL 108 ± 30	0	1 (4.5%) de novo GERD	0	NR	NR	NR	NR	OAGB with a Nissen valve is a safe, effective technique for patients with hiatal hernia. No early complications, minimal late reflux; good weight loss and follow-up.
Sumer 2021 [206]	bridged OAGB	44	18 months	45.2 ± 9.3	23/21	41.5 ± 6.4	NR	3	16	NR	3	NR	%TWL : 30.6 ± 6.9 %EWL: 79.8 ± 16.1	2(stenosis of the GJ anastomosis and stapler line bleeding/hematoma, no surgery required)	1 MU	0	NR	NR	NR	NR	Patients who underwent BOAGB lost weight similarly to those who underwent OABG as reported in the literature, without an apparent increase in complications related to the technique.
Tizmaghz 2022 [207]	OAGB	702	12 months	38.9 ± 10.8	134/568	45.9 ± 6.1	NR	NR	NR	NR	NR	NR	BMI 1 y 28.9 ± 4.5	NR	NR	NR	NR	NR	NR	NR	Significant changes in body composition and basal metabolic rate; serum albumin unreliable for nutritional status post-LMGB.
Toh 2018 [208]	SG (RYGB) (OAGB)	393 (125)(43)	5 years	40 ± 11 (44 ± 10) (47 ± 9)	150/243 (54/71)(13/30)	43 ± 7.9 (40.9 ± 9.9) (40.3 ± 9.1)	NR	NR	73(84)(32)	NR	NR	NR	%EWL at 5 years: 47.3 (47.7)(65.2)		overall complication rate: 393(125)(43)	NR	60(73)(23)	NR	NR	NR	RYGB and OAGB showed the greatest % EWL at 5 years, recommended for moderate T2DM; LSG effective with high remission for mild T2DM and good safety.

Table 5 (continued)

Toksoy 2023 [209]	OAGB(LSG)	121(54)	12 months	43.9 ± 12.1 (40.5 ± 10.8)	42/79(22/32)	42.2 ± 4.5 (43.1 ± 3.9)	53.2 ± 22.8 55.4 ± 21.9)	3.73 ± 1.19 4.05 ± 1.20)	108 /39	15/11	68/33	NR	EWL% 90.3 ± 13 (79.2 ± 16); TWL% 36.4 ± 9 (30.5 ± 9)	OAGB: 12(6 bleeding, 5 leaks, 1 DKA), LSG: 2 bleeding, 3 leaks, 1 DKA, 1 pleural effusion. Reintervention: 1(1)	OAGB: 6 GERD, 1 MU LSG: 10 GERD	0(0)	94(32)	40(18)	14(11)	NR	OAGB is superior to LSG with shorter hospital stay, higher EWL%, TWL%, and fewer GERD symptoms. Both are effective and safe in metabolic surgery.
Vasquez 2021 [210]	OAGB	15	24 months	46.6 ± 11.25	7/8	28.41 ± 0.94	NR	NR	15 (100%)	NR	NR	NR	BMI reduced to 21.8 ± 0.89 at 24 months	NR	NR	0	15 (100%)	NR	NR	NR	OAGB effective for complete DM2 remission in patients with BMI < 30 kg/m2, up to 24 months follow-up.
Voglino 2021 [211]	OAGB(RYGB)	57(57)	3 years	40(42)	12/45(11/46)	45.9(47.1)	NR	NR	16(25)	NR	31(24)	33(28)	%TWL 3 years: 36.2 (33.1)	NR	NR	0(0)	87.5% (92%)	51.6% (58.3%)	NR	69.7% (78.6%)	No significant differences in malnutrition, comparable improvement of comorbidities and anthropometric parameters between OAGB and RYGB at 3 years.
Winstanley 2021 [212]	OAGB	89	25 months	45.96 ± 12.12	31/58	47.89 ± 8.10	NR	2	NR	NR	NR	NR	%TWL 34.65 ± 9.28 %EWL 68.89 ± 17.68	3(adhesive band obstruction;pain and vomiting; PE)	5 conversion to RYGB for GERD, 43 postoperative GERD symptoms requiring PPI, 4 MU	0	NR	NR	NR	NR	OAGB can be offered to patients with HH with acceptable GORD outcomes but caution is advised in patients withpreoperative GERD symptoms.
Zamaninour 2021 [213]	OAGB	363	12 months	39.93 ± 9.98	65/298	46.68 ± 6.25	NR	NR	80 (22.9%)	79 (21.8%)	70 (20%)	NR	%TWL 35.72 ± 6.85; significant loss of fat and muscle mass	NR	NR	NR	NR	NR	NR	NR	OAGB may be effective over a follow-up period of 1 year in achieving weight, fat mass reduction, and improved serum levels of glycemic parameters and lipid profiles.

Revisional surgery

First Author, year	Primary surgery(*n*)	Reason for revision (%)	Group (comparative)	*n* = (comp group)	Age at revision	Maximum time point or fu(*n* =, months or % follow-up)	M(F)	Baseline BMI at redo	Duration of surgey (min)	LOS(days)	T2DM(n)	OSAS(*n*)	HTN(n)	DYSLIPIDEMIA(*n*)	Weight loss outcomes	Early surgical complications	Late surgical complications	Mortality	T2DM remission(n)	HTN remission(*n*)	OSAS remission(*n*)	Dyslipidemia remission(*n*)	Conclusion
AbuAbeid 2022 [214]	LAGB (125), LSG (64), SRVG (14)LAGB (125), LSG (64), SRVG (14)	Insufficient weight loss/weight regain (89.1%)	OAGB	203	45.7 (LAGB), 42.4 (SG), 49.4 (SRVG)45.7 (LAGB), 42.4 (SG), 49.4 (SRVG)	48.6 ± 11.7 (LAGB), 50.0 ± 11.6 (SG), 49.4 ± 11.6 (SRVG); 3y=100%, 4y=85%, 5y=60%48.6 ± 11.7 (LAGB), 50.0 ± 11.6 (SG), 49.4 ± 11.6 (SRVG); 3y=100%, 4y=85%, 5y=60%	28% M, 72% F (LAGB); 29.7% M, 70.3% F (SG); 14.3% M, 85.7% F (SRVG)	41.3 (LAGB), 42.1 (SG), 41.7 (SRVG)	NR	NR	15 (LAGB), 5 (SG), NR (SRVG)	7 (LAGB), 4 (SG), NR(SRVG)	26 (LAGB), 14 (SG), NR (SRVG)	27 (LAGB), 10 (SG), NR (SRVG)	EWL: 51.6% (LAGB), 50.0% (SG), 49.7% (SRVG); TWL: 25.1% (LAGB), 24.2% (SG), 22.7% (SRVG); EBMIL: 25.0% (LAGB), 24.0% (SG), 22.7% (SRVG); EWL > 50% in ~50%	6 patients: 3 leaks, 3 abscess/fluid collections, 4 hemorrhage (1 splenectomy), 1 stricture; 2.5% major (Clavien-Dindo ≥ 3)	14 patients: 4 MU perforation, 4 PEM, 3 bile reflux, 2 internal hernia, 1 trocar-site hernia; others: cholecystectomy (11), hernia repair (7), adhesiolysis (1)	1 (0.49%)	14/15 (93.3%) LAGB, 5/5 (100%) SG	22/26 (84.6%) LAGB, 14/14 (100%) SG	NR	NR	Revisional OAGB for suboptimal clinical outcome after restrictive procedures yields ~50% with EWL > 50%; high rate of T2DM and HTN resolution high
Almalki 2018 [215]	VBG (81), AGB (35)	Weight regain 50.9%, Inadequate weight loss 31%, Intolerance 18.1%	OAGB(RYGB)	81(35)	38.7 ± 9.8 (39.7 ± 10.8)38.7 ± 9.8 (39.7 ± 10.8)	5 years; 1-year FU *n*=71 (61%), 5-year FU *n*=26 (37.1%)	21/60(12/23)	37.8 ± 9.6 (37.1 ± 8.4)	167.7 ± 55.8 (218.3 ± 44.5)	4.0 ± 1.9 (2.9 ± 0.8)	NR	NR	NR	NR	1 year EWL %76.8(32.9); 5-year: EWL% 73.0(58.9)	OAGB: 9 major (11.1%), 5 minor (6.2%); RYGB: 3 major (8.6%), 4 minor (11.4%); Includes leak (*n*=6), obstruction (*n*=3), bleeding (*n*=2), respiratory failure (*n*=1)	NR	1(0)	NR	NR	NR	NR	Both OAGB and RYGB are feasible and safe. OAGB showed superior weight loss at 1 and 5 years, but higher risk of long-term anemia.

Table 5 (continued)

AlSabah 2018 [216]	LSG (31)	Weight regain 86.2%, Inadequate weight loss 10.3%, GERD 3.4%	OAGB	31	41.44 ± 10.22	1 year; 17 patients completed 1-year FU	3/28	42.58 ± 5.83	118.18 ± 53.11	NR	NR	NR	5 (17.2%)	1 (3.4%)	%EWL: 14.5% (2w), 31.9% (3mo), 48.0% (6mo), 58.9% (1y); Weight loss: 25.0 kg at 1 year	3 events (10.3%): 2 leaks (1 stent, 1 percutaneous drainage), 1 stenosis (balloon dilation)	0	0	NR	50% (2/5)	NR	0% (0/1)	Revisional OAGB post-LSG is safe and effective in the short term, achieving 58.9% EWL at 1 year with acceptable morbidity.
AlSabah 2023 [217]	LSG (29)	Weight regain 86.2%, Inadequate weight loss 13.8%	OAGB	29	36.34 ± 10.03	5 years; *n*=12 (41%)	3/26	42.4 ± 5.8	NR	NR	NR	NR	NR	NR	%EWL: 14.5% (2w), 31.9% (3mo), 48.0% (6mo), 56.3% (1y), 57.2% (4y), 54.7% (5y); EBMIL: 22.06% at 4y, 17.61% at 5y	Bleeding (2; 6.7%), Leak (1; 3.3%)	GERD (9; 30%) requiring treatment	0	1	4	NR	1	Revisional OAGB post-LSG is a feasible and safe procedure, with good short- and long-term weight loss outcomes, maintained weight loss over a 5-year period, and low major complication rates.

Table 5 (continued)

Bashah 2020 [218]	LSG (91)	Recurrent weight gain (100%)	OAGB(SADIS)	49(42)	37.83 ± 9.36	3.8 ± 1.4 years	1:6	43.6 ± 7.4	NR	NR	6(8)	NR	5(4)	NR	12-month EWL%: SADI-S 57.6%, OAGB-MGB 47.1%; 12-month TWL%: SADI-S 23.7%, OAGB-MGB 18.7%; No significant difference in EWL at 18 months	SADI-S: 1 abdominal collection; OAGB-MGB: 1 staple line leak, 1 bile reflux (converted), 1 GERD	SADI-S: steatorrhea in 6 patients, nutritional deficiency (1); OAGB-MGB: anastomotic ulcer (3), bile reflux (3), de novo GERD (3), nutritional deficiency (1)	0(0)	SADI-S: 4 complete, 1 remission at 18 mo; OAGB-MGB: 1 complete, 2 improved	3(2)(60%)	NR	Improved lipid panel in both groups, no counts given	SADI-S and OAGB-MGB are effective revisional procedures post LSG with comparable outcomes in terms of weight and BMI loss, remission of comorbidities, and nutritional deficiency in short-to-medium term follow-up. SADI-S procedure appears to cause less upper gastrointestinal complications
Bhandari 2019 [219]	LSG (32)	suboptimal clinical response (100%)	OAGB	32	42.6 ± 11	3 years; n=22 (69%) at 3-year follow-up	13/19	38.53 ± 6.26	NR	NR	2	0	3	NR	%EBWL: 54.90% (1y), 52.13% (2y), 35.59% (3y); %TWL: 22.05% (1y), 20.97% (2y), 15.03% (3y)	0	0	0	8/9 (88%) at 1–2y; 5/7 (71.4%) at 3y	~80% remission sustained through 3 years	100% remission (2/2)	NR	OAGB is a safe and feasible option for revision of SG with inadequate weight loss or significant weight regain. However, in this study, weight loss after 2-years was not greater than the nadir weight after the SG and there was a tendency towards weight regain at 3-year follow up.

Table 5 (continued)

Bruzzi 2016 [220]	LAGB (22), VBG (4), LSG (4)	Inadequate weight loss 66%, GERD 13%, Dysphagia 10%, Gastric prolapse 10%	OAGB	30	53 ±9	5 years (median 66 months); 100% 5-year FU in 126 patients	4/26	45.5 ±7	140 ± 45	NR	9	6	13	9	BMI at 5y: 32; %EBMIL at 5y: 66 ± 22%; Weight loss failure in 1 patient (3.3%)	3 events (10%): 1 perianastomotic abscess, 1 port-site herniation, 1 minor wound infection	3 events (10%): 2 biliary reflux (converted to RYGB), 1 DVT, 1 marginal ulcer	0	6/7 (85%)	7/12 (58%)	3/6 (50%)	6/8 (75%)	OAGB after failed restrictive procedures is safe and effective at 5 years, with similar weight loss and comorbidity remission as primary OAGB, but worse GI symptoms and quality of life (GIQLI).
Chiappetta 2019 221]	LSG (55)	Weight regain or insufficient weight loss 67%, intractable GERD 33%	OAGB(RYGB)	34(21)	46.76 ± 11.5 (46.14 ± 10.8)	1 year; 100% FU	11/23(2/19)	45.7 ± 8.0 (36.6 ± 6.9)	78.7 ± 35.7 (98.2 ± 24.3)	5 days (both groups)	7(5)	5(2)	9(3)	13(8)	TWL at 1y: OAGB 15.8 ± 7.8%, RYGB 10.3 ± 7.6%; EWL from SG: OAGB 64 ± 16%, RYGB 76 ± 23%; BMI drop at 1y: OAGB −9.7, RYGB −3.6	RYGB: 3 pts (14.3%): 1 anastomotic ulcer, 1 ileus (reoperation), 1 mild pancreatitis; OAGB: none	OAGB: bile reflux 2 (5.9%), dumping 1 (2.9%), anastomotic ulcer 6 (17.6%), GERD 4 (11.8%); RYGB: dumping 4 (19%), GERD 1 (4.8%), anastomotic ulcer 2 (9.5%)	0	7/3)	6(0)	4(0)	8(2)	At 1-year FU, no significant differences were seen between RYGB and OAGB-MGB regarding readmission and minor complications. OAGB-MGB after failed SG was found to be a quicker procedure with less perioperative complications
Dayan 2023 [222]	AGB(276)	98.5% for IWL/WR	OAGB(LSG)	125(151)	45.7 ± 10.3 (44.4 ± 11.5)	5 years; OAGB: 61.6%, SG: 69.5%	9/116(35/116)	41.3 ± 6.6 (42.3 ± 9.6)	NR	2.5 ± 0.93 (4.4 ± 2.8)	15(38)	NR	26(47)	NR	5y BMI: OAGB 31.3 ± 8.3, SG 34.5 ± 6.9; TWL: OAGB 25.1% ± 17.6, SG 18.8% ± 14.1	Leak: OAGB 1.6%, SG 2.6%; CD ≥ 3: OAGB 2.4%, SG 4%	OAGB: 5 reoperations (2 for PEM, 2 for biliar reflux, 1 for MU) LSG: 9 reoperations (5 converted to OAG per WR, 3 to RYGB for both GERD and WR, 1 to RYGB for de novo GERD alone	1(0)					

Table 5 (continued)

Dayan 2023 [223]	LSG (78)	OAGB: 80.6%, RYGB: 42.5% for weight regain/ inadequate loss; 100% GERD in all patients	OAGB(RYGB)	31(47)	43.8 ± 11.5 (50.3 ± 13.4)	32.4 months (mean follow-up)	8/23(9/38)	39.9±8.8 (30.6 ± 6)	NR	3.8 ± 2.7 (5.2 ± 4.1)	4(8)	9(4)	11(15)	10(13)	TWL%: OAGB: 22 ± 12.9%, RYGB: 4.4 ± 14.6%; BMI at FU: OAGB: 33 ± 7.6, RYGB: 29 ± 4.6	OAGB: none; RYGB: bleeding (4), reoperation (3), Clavien-Dindo ≥ 3 (4); no leaks in OAGB, 1 leak in RYGB	OAGB: 2 patients required conversion to RYGB (1 for PEM, 1 for GERD+WR)	0(0)	NR	NR	NR	NR	RYGB provides better chances for definitive treatment of GERD. OAGB results in good resolution rates and improvement of its related quality of life.
DeLaCruz 2020 [224]	LSG (84)	SADI: 100% for weight regain/ IWL, 16.7% GERD, 7% T2DM; OAGB: 68.9% weight regain/IWL, 61.9% GERD, 2% T2DM	OAGB(SADIS)	42(42)	47.2± 10.8(45.1 ± 11.1)47.2 ± 10.8(45.1 ± 11.1)	3 years; FU at 36 mo: SADI 57.1%, OAGB 59.5%	14/11(28/31)	43.4 ± 9.2 (42.8 ± 7.9)	123 ± 39 (138 ± 40)	6.1 ± 2.9 (6.5 ± 6.6)	16(12)	12(10)	25(31)	NR	%TWL at 36 mo: SADI 44.5 ± 12%, OAGB 40.5 ± 9.7%; %EWL at 36 mo: SADI 80.1 ± 16.3%, OAGB 73.6 ± 17.9%	SADI: 3 (7.1%) major (stump insufficiency, anastomotic leak, hernia); OAGB: 1 (2.4%) major (small bowel perforation)	SADI: CD III–IV: leak (2.4%), small bowel perf (2.4%), incisional hernia (4.8%), internal hernia (2.4%), malabsorption, dumping, steatorrhea, diarrhea, bile reflux 4.8%; OAGB: CD III–IV: leak (2.4%), perforation (2.4%), hernia (4.8%), bile reflux 26.7%, dumping 11.9%	0(1)	NR	NR	NR	NR	SADI and OAGB were effective second-step procedures for further weight reduction after LSG in initially super-obese patients after short to medium follow-up.
Debs 2020 [225]	SG (77)	100% weight loss failure or weight regain	OAGB	77	45.3 ± 14.8	5 years; 91% at 1y, 72.3% at 2y, 42% at 5y	14/63	40.1	42.0 ± 8.0	3	13 (16.9%)	33 (42.9%)	23 (29.9%)	NR	At 1y: %EWL 74%, %TWL 25%, %EBMIL 70.7%; At 2y: %EWL 79%, %TWL 29%, %EBMIL 79.9%; At 5y: %EWL 77%, %TWL 26%, %EBMIL 76.0%	3.9% (3 patients): pneumonia (CD II), leak (CD IIIb), hematemesis (CD I)	de novo GERD: 7 (9.1%); 2 required conversion to RYGB; Hypoglycemia: 3 patients; Diarrhea/ steatorrhea: rare, 1 case mild	0	8	15	27	NR	SG to OAGB conversion is effective and safe, achieving high weight loss and metabolic improvement at mid-term follow-up, with low complication and no mortality.

Table 5 (continued)

Felsenreich 2022 [226]	SG (58)	55.7% weight regain/ IWL, 34.2% GERD, 10.1% acute complications	OAGB(RYGB)	13(45)	NR	Mean FU after conversion: RYGB 58.7 mo, OAGB 64.7 mo	3/10(13/32)	45.0 ± 7.3 (38.6 ± 8.6)	NR	NR	RYGB: 10 before, 1 after; OAGB: 2 before and after	RYGB: 5 before, 1 after; OAGB: 1 before and after	RYGB: 26 before, 9 after; OAGB: 3 before, 3 after	RYGB: 8 before, 1 after; OAGB: 2 before, 2 after	At conversion: BMI RYGB 38.6, OAGB 45.0; Nadir BMI: RYGB 28.4, OAGB 28.8; Current BMI: RYGB 30.3, OAGB 31.4; TWL at nadir: RYGB 41.5%, OAGB 44.8%	8 acute conversions (RYGB): leaks (5), stenoses (3); Elective: OAGB 1 wound infection, 1 anastomotic stenosis	OAGB: bile reflux 26.7%, dumping 11.9%, BE 11.1%; RYGB: esophagitis 12.9%, BE 12.9%, GERD persists in 29.9%	1 unrelated death excluded from analysis	RYGB: 9/10; OAGB: no improvement (2/2 remained)	RYGB: 17/26 (65.4%); OAGB: none (3/3 persistent)	RYGB: 4/5 (80%); OAGB: 0% (1/1)	RYGB: 7/8 (87.5%); OAGB: 0%	RYGB after SG offers better GERD resolution and comorbidity remission. OAGB results in comparable weight loss but higher rates of GERD and BE. Surveillance endoscopy is recommended post-conversion.
Gerges 2022 [227]	LSG (28)	53.6% IWL, 46.4% WR	OAGB	28	38.9 ± 9.1	1 year; 100% follow-up	8/20	39.6 ± 4.2	96 ± 17.4	3.4 (range 3–7)	10 (35.7%)	2 (7.1%)	9 (32.1%)	NR	12-month: EWL%: 79.0 ± 14.4%, TWL%: 31.7 ± 6.4	2 leaks (7.1%), 1 bleeding (3.6%), 1 pneumonia, 1 parietal hematoma, 1 port infection	14.3% (4 pts) mild bile reflux controlled medically; 64.3% transient diarrhea	0	NR	NR	NR	NR	OAGB is a highly effective and safe procedure as a revision after LSG
Ghosh 2017 [228]	LAGB (74)	49% weight gain/ inadequate WL; 24% intolerance (reflux, vomiting, diarrhea); 11% WR post band removal; 7% prosthesis; 5% pouch dilation; 3% erosion; 1% slippage	OAGB	74	48.3 ± 10.3	12 months; FU: 97% at 6w, 85% at 3mo, 69% at 6mo, 46% at 12mo	7/67	46.0 ± 8.90	72.7 ± 15.7	2.6 ± 1.2 days	NR	NR	NR	NR	BMI (kg/m^2): 6w: 41.6, 3mo: 38.8, 6mo: 35.4, 12mo: 33.2; %EWL: 6w: 21.0%, 3mo: 37.8%, 6mo: 55.1%, 12mo: 67.0%	17 (20.3%): 1 wound infection, 4 readmissions, 6 GJ strictures/ ulcers, 1 leak, 2 SBO, 1 respiratory failure; CD grade ≥ 3a: 10 pts (13.5%)	6 (8.1%) required conversion to RYGB for pain (1), reflux (4), twisted loop (1)	0	NR	NR	NR	NR	single-stage revisional OAGB after a failed LAGB achieved good short-term weight loss and low 30-day morbidity.
Kermansaravi 2022 [229]	LSG (23)	39% weight regain, 61% weight loss failure	OAGB	23	42.4 ± 9.4	5 years (100% of 23 patients)	3/20	46.3 ± 10.4	70	NR	4 (17.4%)	2 (8.7%)	4 (17.4%)	4 (17.4%)	%EWL: 51.6% (1y), 52.9% (2y), 45.5% (3y), 41.0% (5y); %TWL: 26.6% (1y), 27.4% (2y), 23.9% (3y), 20.9% (5y); BMI: 34.5 (1y), 34.1 (2y), 35.7 (3y), 37.5 (5y)	0	3 new-onset GERD (13%) at 1y, 1 persistent at 5y; All patients had improvement/ remission in DM, HTN, OSA, DLP in 1y	0	Remission: 2, Improvement: 2, Recurrence at 5y: 1	Remission: 3, Improvement: 1 (out of 4)	2/2 (100%)	Remission: 1, Improvement: 3 (out of 4)	OAGB is effective and safe after failed SG for weight regain or insufficient WL, achieving optimal WL by 2 years and sustained improvements in metabolic comorbidities up to 5 years.

Table 5 (continued)

Lessing 2020 [230]	LAGB (57)	WR 43.9%, GERD 19.3%, dysphagia 17.5%, band migration 10.5%, port infection 8.8%	One-step OAGB (two-step OAGB)	41(16)	47.7 ± 10.8	2 years; FU 100% at 1y, 71.9% at 2y	21/36	42.8 ± 7.0	100 (108)	5.3 ± 4.2 (3.1 ± 1.5)	15 (26%)	12 (21%)	23 (40%)	NR	BMI: from 42.8 to 31.3 at ≥ 1y; %EWL: 61.5% (1y), 64.5% (2y); %EWL: 1-step 55.8%, 2-step 67.2% (1y); 1-step 60.7%, 2-step 68.3% (2y)	9 (15.7%); major: 5.2%; 2 leaks, 4 bleeding, 2 hematoma/abscess	0	1 (1.8%) in 1-step group	NR	NR	NR	NR	OAGB is effective as revision after LAGB with good weight loss outcomes. Complication rates were higher than primary OAGB but acceptable. 1-step approach carries more risk, including the only mortality.
Maurice 2021 [231]	254 (233 LAGB, 21 SG)	49% WR/IWL, 18% post-band removal + WR, 14% reflux, 13% intolerance/obstruction, 3% malfunction, 1% pain, <1% post-pregnancy	OAGB	254	47.6 (range 21–71)	4 years; 72% at 1y, 14% at 4y	29/225	43.6 (range 23–76)	NR	NR	NR	NR	NR	NR	Mean %EWL: 1y: 76.7%, 2y: 81.6%, 3y: 78.7%, 4y: 72.5%; Mean %TWL: 1y: 27.3%, 2y: 28.3%, 3y: 28.7%, 4y: 25.4%	29 patients (11%): 22 endoscopies, 7 reoperations, 1 IR drain, 1 wound washout	27 (11%) rerevised to RYGB for reflux, 10 (4%) other operations (bowel obs., hernia), 14 unplanned endoscopies, 2 port hernias, 1 pouch kinking, 1 bypass reversal	0	NR	NR	NR	NR	Revisiona OAGB is safe and effective with good weight loss and low early complications. However, late reflux was frequent, with high PPI use (52%), 11% requiring conversion to RYGB, and 13% patient dissatisfaction.
Moszkowicz 2013 [232]	LSG(23)	81% inadequate weight loss (EBL < 25% or < 50%); 19% weight regain	OAGB	23	49.5 ± 11.2 y	24 months; 95% at 3 mo, 90.5% at 6 mo, 42.9% at 18 mo, 23.8% at 24 mo	8/13	44.0 ± 7.7	NR	5	NR	NR	NR	NR	%EBL: 3 mo = 26.8%, 12 mo = 37.2%, 18 mo = 48.6%, 24 mo = 51.6%; BMI reduced from 44 to 35.7 kg/m^2 at 24 months	1 bile leak (4.7%, Dindo I), 1 incisional hernia repair (4.7%, Dindo IIIb), 5 re-resections of gastric pouch (23.8%)	0	0	NR	NR	NR	NR	Conversion of SG to LMGBP is feasible, safe, and effective with good short-term EWL. No GERD or leak reported; suitable option for failed restrictive surgery.

Table 5 (continued)

Musella 2019 [233]	LAGB (196), LSG (104)	77% poor response (IWL/WR), 23% complications (slippage, pouch dilation, GERD)	OAGB	300	46.1 ± 10.5	Mean 20.8 months (range 6–156)	58/242	41.8 ± 6.3	95.5 ± 3.5	NR	32	NR	76	25	BMI: pre redo 41.8, post OAGB 30.5 ± 5.5; %EBMIL: pre OAGB 13.2 ± 28.2, post OAGB 73.4 ± 27.5; TWL%: post OAGB 25.9 ± 17.7	11/116 un the 1st step(0 leaks), 2/80 in the 2nd step (2 leaks)	Anastomotic ulcer (1.6%), stenosis (0.6%), anemia (0.3%); GERD: de novo in 11.2%	0	20/32 (62.5%)	31/76 (40.8%)	Not reported	14/25 (56%)	OAGB is a safe and effective revisional procedure after failed LAGB or LSG, showing satisfactory WL and good remission of comorbidities, though less than in primary OAGB.
Nevo 2020 [234]	SRVG (54)	OAGB: 95.3% IWL/WR; RYGBP: 81.9% IWL/WR	OAGB(RYGB)	21(33)	43.2 ± 12.1(50 ± 8.4)	21(36)	OAGB: 76% F; RYGB: 72% F	39.7 ± 5.9(41.4 ± 7.8)	NR	4.9 ± 6.9 (10.5 ± 7.3)	1/7	NR	4/6	NR	EBMIL%: OAGB 78.5%, RYGB 57.6%; Objective failure (BMI >35 or EWL <50%): OAGB 10.8%, RYGB 27.5%	OAGB: 2/21 (9.5%): 1 abscess (drain), 1 stricture (Brown anastomosis); RYGB: 5/33 (15.1%): 4 anastomotic leaks, 1 distal stricture	OAGB: 4/17 (23.5%)—malabsorption 3, hernia 1; RYGB: 8/29 (27.5%)—hernia 4, malabsorption 1, others 2	0	0(6)	3(1)	NR	NR	OAGB is a feasible and safe option after failed SRVG with shorter LOS and better EBMIL% compared to RYGB. OAGB associated with fewer complications and higher HTN resolution, though not statistically significant.
Pizza 2021 [235]	LSG (59)	20.3% IWL, 79.7% WR	OAGB	59	47.3 ± 6.8	34.32 ± 1.71 months (100% FU)	24/35	43 ± 4.39	105 ± 41	5 days (median)	11 (18.6%)	4 (6.7%)	33 (55.9%)	NR	%EWL: 69.49 ± 14.46 at 34 mo; BMI drop: 43 → 24.46 ± 2.06; Weight: 137.11 → 71.25 kg; TWL: 48.72 ± 10.13%	6/59 (10.2%): 1 leak, 2 bleedings, 1 SBO, 1 bowel injury, 1 wound infection	Cholecystectomy (5.1%), incisional hernia suspicion (1.7%); Esophagitis A: 16.9%, B: 3.4%; Gastritis: 62.7% grade 1–3	0	8/11 remission (72.7%), 1 improved (9%)	16/33 (48.5%) remission, 13 improved (39.4%)	3/4 improved/remission	NR	OAGB is a safe and effective revision after failed SG, with substantial WL and comorbidity remission. Mild-to-moderate esophagitis/gastritis present but no alarming upper endoscopy findings at 34-month follow-up.

Table 5 (continued)

Poghosyan 2019 [236]	LSG (72)	100% IWL/WR (strict criteria: EWL < 50% or regain > 25%)	OAGB with 200 cm vs 150 cm BPL	38(34)	47 ± 10	5 years; 65.9% retained at 5y	20/52	43.6 ± 7	80 (50–200)	3.1 days (range 3–8)	16 (22%)	23 (32%)	29 (40%)	NR	BMI: baseline 49.1, at conversion 43.6, at 2y: 33.7, at 5y: 34.7; %TWL: 11.6% → 34% at 5y; %EWL: 21% → 66.2% at 5y	3 events (4.2%): 1 bile leak, 1 bleeding (reop), 1 hernia (reop); CD grade I & IIIB	11 events (15.2%): GERD (6), marginal ulcer (2), chronic diarrhea (2), incisional hernia (3); 4 GERD required conversion to RYGB	0	12/16 (75%)	6/29 (20%)	16/23 (70%)	Not reported	Conversion of SG to OAGB is safe and effective with low early morbidity and significant WL and comorbidity improvement. 150-cm BPL leads to similar outcomes as 200-cm, with fewer GI symptoms like GERD and diarrhea.
Poublon 2020 [237]	LSG and LAGB (491)	100% IWL or WR (TWL <25%, EWL <50%, or BMI > 40 at 2y)	OAGB(RYGB)	185(306)	46 ± 9.0(48 ± 9.6)	36 months (12m: n=154 vs 267, 24m: n=90 vs 174, 36m: n=40 vs 87)	46/139(58/258)	45.7 (45.0)	72(83)	Not explicitly reported (1–2 days post-op for most patients)	36(63)	20(23)	Not specifically reported, but CVD 52(96)	33(82)	TWL% (12m) 24.1 ± 9.8(21.9 ± 9.7); TWL% (24m): 23.9 ± 11.7(20.5 ± 11.) EBMIL% (12m) 69.0 ± 44.6(60.0 ± 30.1); EBMIL% (24m): 68.6 ± 51.6(56.4 ± 35.4)	Intra-abdominal complications: OAGB 1.1%, RYGB 4.9%	Biliary reflux (intervention): OAGB 5.4%, RYGB 0.3%; Internal herniation (intervention): OAGB 0.0%, RYGB 4.9% Malnutrition: OAGB 4.9%, RYGB 0.7%	1(1)	31(52)	NR	14(14)	12(40)	OAGB showed superior WL outcomes and lower early complication rate compared to RYGB after failed restrictive bariatric surgery. No significant differences in long-term surgical re-intervention or comorbidity resolution.

Table 5 (continued)

Rayman 2021 [238]	LSG (263)	79.8% weight regain, 20.2% IWL	OAGB(RYGB)	144(119)	42.4 ± 10.5(44.3 ± 11.8)	29 mo (range 7–78)	37/107(35/84)	41.6 ± 5.7(39.6 ± 5.0)	NR	NR	29(31)	13(13)	30(32)	27(24)	%TWL 24.9% ± 9.9 (19.6% ± 11.1); %EWL: 58.7(44.2%)	Overall: 7% (OAGB: 6.9%, RYGB: 6.7%); leak (1.1%), bleeding (1.9%), obstruction (2.3%), stenosis (0.8%), fever (0.8%)	Post-revision GERD: OAGB 17.4%, RYGB 7.6% ($p = 0.018$); IDA (iron def. anemia): OAGB 31.3%, RYGB 27.7% (not significant)	0(0)	19(14)	14(4)	11(11)	16(12)	Conversion from LSG to OAGB results in superior weight loss compared to RYGB but with higher GERD and IDA rates. Both procedures are safe and effective; individualized assessment is necessary.
Sista 2022 [239]	LAGB + LSG (68)	66.2% IWL, 33.8% WR	OAGB(RYGB)	24(44)	49.5(46.5)	24 months	1/23(4/40)	37.85 39.8)	NR	4	NR	NR	NR	NR	%EWL at 24 mo: RYGB: 61.8%, OAGB: 79.45% ; For IWL subgroup: RYGB 57.8%, OAGB 72.7% ; For WR subgroup: RYGB 80.9%, OAGB 80.5%)	Leak 2.2% (1 pt), reoperations: RYGB 4.3%, OAGB 7.7%	NR	NR	NR	NR	NR	NR	both techniques give good results at 24 months in patients who have undergone MRP. However, OAGB shows overall better results, particularly in patients with IWL

Table 5 (continued)

Wang 2004 [240]	VBG (29)	WR 55.2%, IWL 34.5%, severe GERD 10.3%	OAGB	29	39.7 years (range 22–56)	12 months; 100% FU	5/24	41.7 (range 35.0–70.8)	171.4 ± 15.3	6.4 ± 3.2	NR	NR	NR	NR	BMI at 12 mo: 32.1 (range 26.4–42.7)	3 pts (10.3%): 1 GI bleeding (managed conservatively), 1 wound infection, 1 SBO requiring laparotomy (trocar hernia)	2 pts (6.9%) with MU; treated medically	1 (3.4%) due to leak/sepsis in prior open VBG group	NR	NR	NR	NR	OAGB is an effective and safe revision operation for patients with failed VBG.
Wilczyński 2022 [241]	LSG (80)	Weight loss failure 93.6% OAGB, 60.6% RYGB; weight regain 4.3% vs 15.2%; reflux 2.1% vs 24.2%	OAGB(RYGB)	47 (33)	45.0 ± 10.7(41.2 ± 8.9)	5 years (OAGB 74.5%, RYGB 60.7%)	13/34(6/27)	40.4 ± 5.8 (38.7 ± 6.8)	NR	NR	12(6)	5(1)	22(10)	22(6)	%EWL 84.0 vs 72.9 at 5y; %TWL 21.8 vs 18.4 at 5y (not significant)	0(0)	GERD 6(3) Bleeding 2(2) MU 3(4) perforated MU 3(0) stenosis 2(2)	0(0)	11 (2)	6(3)	3(1)	13(5)	OAGB is an equally effective procedure as RYGB for patients after the failure of LSG treatment. Both procedures demonstrate a similar safety profile and weight loss effect. OAGB can also bring potential additional benefits to diabetic patients.

for revisional MBS following restrictive procedures has increased, with rates reaching up to 23% in the long term, further high-quality studies are needed to guide surgeons in selecting the most feasible and safe procedure [87].

Conclusions

In conclusion, One Anastomosis Gastric Bypass (OAGB) is a surgical procedure that has demonstrated significant benefits in weight loss, metabolic outcomes, and resolution of obesity-related medical conditions. OAGB is an effective MBS procedure that offers rapid and sustained weight loss, improving glucose metabolism, lipid profiles, and blood pressure control. However, potential complications and long-term consequences of OAGB need to be carefully considered, and further research is needed to assess the durability of weight loss and metabolic improvements over time.

Recommendation of the IFSO OAGB Taskforce

1 OAGB offers substantial weight loss that is maintained in the short and medium term (≤ 5 years)
2 OAGB can be performed with a relatively short operative time, low perioperative complication rate, and good remission of obesity-associated medical problems (T2DM, HTN, OSAS, DL).
3 OAGB as primary surgery compared to OAGB as revisional has better results regarding perioperative complication rate, WL, and resolution of obesity-related medical conditions.
4 Biliopancreatic limb length may be associated with differences in weight loss and nutritional deficiencies.
5 Bile reflux does not appear to be a significant issue following OAGB. This complication could be underestimated/underreported in some studies.
6 No cases of gastroesophageal cancer following OAGB were reported in the RCTs analyzed.
7 MBS centers that treat patients with OAGB should be aware of the risk of long-term nutritional deficiencies, and patients should be counseled to stay in long-term multidisciplinary care to prevent, monitor, and treat this possible complication.
8 More tailored minerals and fat-soluble vitamins supplementation protocols should be considered following OAGB, taking into consideration other influencing factors (i.e., preoperative nutritional status, dietary habits, ethnicity, different follow-up times among MBS centers)
9 Long-term follow-up, including nutritional monitoring, is strongly recommended and should remain under the supervision of specialized centers able to sustain the cost and provide the availability of proper fat-soluble and trace mineral monitoring.
10 Assess signs and symptoms of mineral and fat-soluble vitamins and, in case of their presence, check their serum/plasma levels at least annually following OAGB.

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Declarations

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Authors and Affiliations

Maurizio De Luca[1] · Amanda Belluzzi[1] · Matteo Monami[2] · Luigi Angrisani[3] · Miguel Angel Carbajo[4] · Nicola Di Lorenzo[5] · Jacques Himpens[6] · Mohammad Kermansaravi[7] · Giovanni Merola[8] · Giuseppe Navarra[9] · Abdelrahman Nimeri[10] · Tarissa B. Z. Petry[11] · Giacomo Piatto[12] · Scott Shikora[10] · Ricardo V. Cohen[11]

✉ Maurizio De Luca
maurizio.deluca@aulss5.veneto.it

Amanda Belluzzi
amanda.belluzzi@aulss5.veneto.it

Matteo Monami
matteo.monami@unifi.it

Luigi Angrisani
luigi.angrisani@unina.it

Miguel Angel Carbajo
doctorcarbajo@obesos.info

Nicola Di Lorenzo
nicola.dilorenzo@uniroma1.it

Jacques Himpens
Jacques_himpens@hotmail.com

Mohammad Kermansaravi
mkermansaravi@yahoo.com

Giovanni Merola
sephiroth877@gmail.com

Giuseppe Navarra
gnavarra@unime.it

Abdelrahman Nimeri
animeri@bwh.harvard.edu

Tarissa B. Z. Petry
tpetry@haoc.com.br

Giacomo Piatto
giacomoplatz@gmail.com

Scott Shikora
sshikora@bwh.harvard.edu

Ricardo V. Cohen
ricardo.cohen@prestador.haoc.com.br

1 Department of Emergency, General and Bariatric Surgery, Rovigo Hospital, Rovigo, Italy, Rovigo, Italy

2 Careggi Teaching Hospital and University of Florence, Florence, Italy., Florence, Italy

3 University of Naples Federico II, Naples, Italy

4 Center of Excellence for the Study and Treatment of Obesity and Diabetes, Valladolid, Spain, Valladolid, Spain

5 Sapienza University, Rome, Italy

6 Centre Hospitalier Universitaire de Saint-Pierre, Brussels, Belgium

7 Iran University of Medical Sciences, Teheran, Islamic Republic of Iran

8 San Giovanni Di Dio Hospital, Frattamaggiore, Naples, Italy

9 University of Messina, G. Martino University Hospital, Messina, Italy

10 Harvard Medical School, Boston, United States

11 The Centre for Obesity and Diabetes, Hospital Alemao Oswaldo Cruz, São Paulo, Montebelluna, Brazil

12 Hospital of Montebelluna, Montebelluna, Italy