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OUTCOMES AND COMPLICATIONS OF ONE-ANASTOMOSIS (MINI) GASTRIC BYPASS SURGERY IN MORBID OBESITY: AN AMBISPECTIVE OBSERVATIONAL STUDY IN A TERTIARY CARE INSTITUTE

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ABSTRACT

Background: Morbid obesity is a major public health problem associated with substantial metabolic and cardiovascular morbidity. Mini-gastric bypass / one-anastomosis gastric bypass (MGB/OAGB) is a simpler alternative to Roux-en-Y gastric bypass with reported favourable weight-loss and metabolic outcomes.However, detailed short-term metabolic and surgical outcome data from tertiary care centers in specific regional populations remain crucial for refining surgical indications. The aim is to assess the outcomes and complications of OAGB/MGB surgery for the treatment of morbid obesity in a tertiary care institute.

Materials and Methods: This prospective and retrospective observational study was conducted over a one-year period, a total of 20 morbidly obese patients (11 female, 9 male) underwent laparoscopic OAGB/MGB. The surgical technique utilized an elongated 15-18 cm gastric pouch anastomosed to an isoperistaltic 180 cm biliopancreatic jejunal limb. Primary outcomes included weight loss and early/late postoperative complications. Secondary outcomes included changes in body mass index (BMI), glycated haemoglobin (HbA1c), lipid profile (triglycerides, total cholesterol), and liver transaminases (AST, ALT) evaluated at baseline, 4, 12, and 24 weeks postoperatively. Statistical analyses were performed utilizing independent t-tests and ANOVA.

Results: The mean patient age was predominantly between 31 and 50 years. At 24 weeks postoperatively, mean body weight decreased significantly from 116.95±7.54 kg to 86.45±6.05 kg (F= -217.65, p<0.01), corresponding to a BMI reduction from 42.61±1.48 kg/m² to 31.67±1.62 kg/m² (t=-27.15, p<0.01). Metabolic parameters demonstrated profound improvement: HbA1c reduced from 8.03±0.77% to 6.29±0.37% (p<0.01), triglycerides fell from 175.15±15.74 mg/dL to 112.70±7.23 mg/dL (p<0.01), and total cholesterol declined from 200.40±13.52 mg/dL to 155.75±9.05 mg/dL (p<0.01). Hepatic evaluation revealed a significant decrease in ALT from 43.90±22.18 U/L to 32.00±7.61 U/L (p<0.01), whereas AST changes were not statistically significant (p=0.142). Early complications included wound infection (10%), bleeding per rectum (5%), deep vein thrombosis (5%), and non-specific vomiting (5%). Late complications consisted of diarrhoea/dumping syndrome (10%), marginal ulcer (5%), and small bowel obstruction requiring reoperation (5%).

Conclusion: Laparoscopic OAGB/MGB is a highly efficacious surgical intervention for morbid obesity, demonstrating rapid and significant short-term weight loss, robust glycaemic control, and substantial improvements in lipid

and specific hepatic enzymatic profiles. While the procedure maintains a generally favourable safety profile, the incidence of specific early and late complications underscores the necessity for meticulous surgical technique and intensive postoperative surveillance.
Keywords: Morbid obesity, Bariatric surgery, One-anastomosis gastric bypass, Mini gastric bypass, Weight loss, HbA1c, Metabolic outcomes, Postoperative complications.

INTRODUCTION

The global epidemic of obesity represents one of the most pressing public health and clinical challenges of the 21st century.[1] Characterized by the excessive and ectopic accumulation of adipose tissue, morbid obesity transcends a mere physical alteration to manifest as a complex, chronic, relapsing neurobehavioral and metabolic disease.[2] Adipose tissue dysfunction incites a state of chronic, low-grade systemic inflammation mediated by the dysregulated secretion of adipokines, interleukins, and tumour necrosis factor-alpha[2]. This persistent inflammatory milieu fundamentally disrupts systemic metabolic homeostasis, promoting insulin resistance, endothelial dysfunction, and a highly prothrombotic state.[1,2]

Consequently, morbid obesity serves as a primary independent risk factor for a spectrum of life-limiting noncommunicable diseases, most notably type 2 diabetes mellitus, atherosclerotic cardiovascular disease, hypertension, non-alcoholic fatty liver disease (NAFLD), and numerous malignancies.[1]

In recent decades, epidemiological data have underscored the rapid acceleration of obesity rates across diverse demographics[1]. According to global estimates, obesity affects hundreds of millions of individuals, fundamentally straining healthcare infrastructures and resulting in massive socioeconomic burdens due to reduced productivity and exponentially escalating healthcare costs.[2] Parallel epidemiological trends are acutely visible in developing nations, where rapid urbanization and shifts toward highly processed diets have catalyzed a surge in metabolic syndrome.[1]

When conservative medical management– comprising lifestyle interventions, dietary restriction, behavioural therapy, and pharmacotherapy– fails to achieve durable weight loss or ameliorate progressive metabolic derangements, surgical intervention becomes a clinical imperative.[3] Current international guidelines universally recognize metabolic and bariatric surgery as the most clinically efficacious and durable therapeutic modality for severe obesity.[3] The established indications for bariatric intervention typically encompass patients with a body mass index (BMI) of ≥35 kg/m² regardless of presence, absence, or severity of obesity-related conditions, or ≥30 kg/m² in the presence of metabolic disease.[3] Over the evolutionary history of bariatric surgery, numerous anatomical configurations have been developed, traditionally categorized into restrictive, malabsorptive, or combined procedures.[4] Conventional laparoscopic Roux-en-Y gastric bypass (RYGB) has historically been considered the reference standard for combined restrictive and metabolic efficacy.[5]

However, RYGB is technically demanding, necessitates the creation of two separate gastrointestinal anastomoses, and is associated with a steep learning curve and specific perioperative morbidities.[5] In this context, the one-anastomosis gastric bypass (OAGB), originally introduced into the surgical lexicon as the mini gastric bypass (MGB), has gained substantial international traction as a potent and technically streamlined alternative.[4]

Pioneered in the late 1990s, the OAGB/MGB technique involves the construction of a long, narrow lesser-curvature gastric pouch anastomosed via a single gastrojejunostomy to a segment of the jejunum, effectively bypassing a significant portion of the proximal small intestine.[4,6] This anatomical reconfiguration bypasses the duodenum and proximal jejunum, simultaneously inducing early satiety via gastric restriction and driving profound neurohormonal alterations in the hindgut that potentiate incretin responses[7]. These combined physiological mechanisms result in robust expected effects on weight reduction, BMI normalization, glycaemic control, lipid profile optimization, and the amelioration of liver-related biochemical parameters.[7] The procedure specifically alters the neuroendocrine axis, upregulating the secretion of Glucagon-like peptide-1 (GLP-1) and Peptide YY (PYY), which serve to augment insulin sensitivity and suppress appetite.[7]

Despite the reported technical advantages– including a shorter operative duration and the theoretical reduction in internal herniation risk– OAGB/MGB remains the subject of rigorous clinical scrutiny.[8] Critics frequently highlight the potential risks of bile reflux gastritis, marginal ulceration, and severe nutritional or protein-calorie malnutrition resulting from variations in the bypassed biliopancreatic limb length.[7]

Furthermore, meticulous evaluation of both early complications (e.g., surgical site infections, thromboembolic events, anastomotic haemorrhage) and late complications (e.g., dumping syndrome, strictures, bowel obstruction) is requisite to validate the procedure's risk-benefit ratio in diverse clinical settings.[6,9,10]

Rationale of the Study

Despite the global adoption of OAGB/MGB, evaluating its outcomes within specific regional populations remains critical, as distinct genetic, dietary, and baseline metabolic profiles can significantly influence surgical trajectories. This study addresses an important evidence gap by analyzing the short-term efficacy, safety, and metabolic impact of OAGB/MGB in a tertiary-care demographic facing a rapid surge in severe obesity. By rigorously tracking 24-week changes in anthropometric parameters (weight, BMI) and key biochemical markers (HbA1c, lipids, transaminases), this study quantifies early physiological adaptation and metabolic remission. Furthermore, documenting the precise incidence of early and late surgical complications is essential to refine institutional quality standards and inform localized patient-consent protocols.

Aim and Objectives

The primary aim of this study was to evaluate the clinical efficacy and safety of laparoscopic one-anastomosis/mini gastric bypass (OAGB/MGB) for the treatment of morbid obesity. Specifically, the primary objectives were to quantify progressive postoperative weight loss and to determine the incidence of early and late surgical complications over a 24-week follow-up period. Furthermore, the study sought to systematically assess secondary metabolic and biochemical outcomes, including longitudinal changes in glycemic control (HbA1c), systemic lipid profiles, and hepatic transaminases (AST and ALT), evaluated comprehensively at baseline, 4, 12, and 24 weeks postoperatively.

MATERIALS AND METHODS

Study Design and Setting: Prospective and retrospective observational hospital-based study conducted in the Department of General Surgery, M.G.M. Medical College and M.Y. Hospital, Indore, Madhya Pradesh, India.

Study period: One year from the date of institutional ethics committee approval.

Study Population and Sample Size: The study population comprised morbidly obese patients who presented to the outpatient general surgery department and were deemed medically and anatomically suitable for OAGB/MGB. In accordance with sample size calculations utilizing the Cochrane equation, the requisite sample size for the study was determined to be 20 patients.

Inclusion criteria

Age ≥18 years of either sex; BMI ≥40 kg/m² without comorbidities or BMI ≥35 kg/m² with comorbidities; failure of previous non-surgical weight-reduction attempts; willingness to provide informed consent.

Exclusion criteria

Unavailability for 1-year follow-up; reversible endocrine causes of obesity; current drug or alcohol abuse; uncontrolled severe psychiatric illness; lack of comprehension of risks, benefits, expected outcomes and required lifestyle changes.

Study Procedure

Preoperative Assessment: All enrolled participants underwent a multidisciplinary evaluation, encompassing anthropometric profiling, biochemical analysis (complete blood counts, coagulation, metabolic panels, and endocrine screening), and cardiovascular risk stratification. Preoperative upper gastrointestinal endoscopy and abdominal ultrasonography were performed to evaluate for hiatal hernias, severe gastroesophageal reflux disease (GERD), or cholelithiasis. Informed written consent was obtained from all patients.

Operative Procedure: Laparoscopic OAGB/MGB All procedures were performed under general anesthesia using a standard five-port laparoscopic approach in a modified lithotomy, steep reverse Trendelenburg position. Following dissection of the esophagogastric angle and ligation of the distal lesser sac, a 15–18 cm lesser-curvature gastric pouch (50–150 mL capacity) was constructed using linear staplers. Staple lines were routinely reinforced with continuous 3-0 polydioxanone sutures.

An antecolic, isoperistaltic omega-loop gastrojejunostomy was performed 200 cm distal to the ligament of Treitz, resulting in a standardized 180 cm biliopancreatic limb. The anastomosis was constructed using a 45 mm linear stapler, and the enterotomy was closed and reinforced with sutures. Petersen's defect was routinely closed. According to the study protocol, a 6.5-cm silicone restrictive ring was randomly placed around the gastric pouch in a subset of patients. Routine intraoperative leak testing confirmed anastomotic integrity prior to closure.

Postoperative Care and Follow-up Schedule: Postoperative management followed standard institutional bariatric protocols. Patients were discharged upon demonstrating tolerance to clear liquids and adequate pain control. Outpatient clinical follow-up was scheduled at 4, 12, and 24 weeks postoperatively.

Outcome Variables and Data Collection Methodology: Data were collected via prospective tracking and retrospective chart review. Primary outcomes included changes in weight and BMI, evaluated preoperatively and at 4, 12, and 24 weeks. Secondary metabolic outcomes included lipid profiles (triglycerides, total cholesterol) and hepatic transaminases (AST, ALT) evaluated at all time points, alongside HbA1c measured preoperatively and at 12 and 24 weeks. Complications were classified chronologically as early (≤ 30 days; e.g., haemorrhage, thromboembolism, leak, infection) or late (> 30 days; e.g., dumping syndrome, marginal ulceration, bowel obstruction).

Statistical Analysis

Statistical analyses were performed using SPSS version 21 (IBM Corp., Chicago, IL, USA). Categorical data were presented as frequencies and percentages, and continuous data as means ± standard deviations (SD). Longitudinal changes across multiple time points were analyzed using Analysis of Variance (ANOVA), while two-point comparisons utilized independent t-tests. A p-value of < 0.05 was considered statistically significant.

RESULTS

Table 1: Baseline Demographic Characteristics of the Study Population (n = 20)

Characteristic		Frequency (n)	Percentage (%)
Age Group (years)	20-30	1	5.0
	31-40	10	50.0
	41-50	9	45.0
Gender	Male	9	45.0
	Female	11	55.0

A total of 20 morbidly obese subjects fulfilling all inclusion criteria were enrolled in the study and underwent laparoscopic OAGB/MGB. Analysis of the gender distribution revealed a slight female predominance, with the cohort comprising 11 females (55.0%) and 9 males (45.0%). The age distribution of the study subjects indicated that the majority of the patients fell within middle adulthood. Specifically, 10 patients (50.0%) were aged between 31 and 40 years, 9 patients (45.0%) were aged between 41 and 50 years, and only 1 patient (5.0%) was between 20 and 30 years of age.

Table 2: Changes in Weight and BMI at Baseline, 4, 12, and 24 Weeks Postoperatively (n = 20)

Parameter	Preoperative	4 Weeks	12 Weeks	24 Weeks	Test Statistic†	p-value
Weight (kg)	116.95±7.54	107.73 ± 6.15	96.08 ± 5.85	86.45 ± 6.05	F = -217.65	< 0.01*
BMI (kg/m²)	42.61 ± 1.48	-	-	31.67 ± 1.62	t = -27.15	< 0.01*

The surgical intervention yielded a profound and rapid reduction in anthropometric parameters across the 24-week follow-up period. [Table 2] The mean preoperative weight of the cohort was 116.95 ± 7.54 kg. Following surgery, a consistent and progressive decline in mean body weight was observed at each subsequent interval: decreasing to 107.73 ± 6.15 kg at 4 weeks, 96.08 ± 5.85 kg at 12 weeks, and reaching 86.45 ± 6.05 kg at 24 weeks. This represented a substantial absolute mean weight reduction of 30.5 kg over 6 months, a highly statistically significant outcome ($F = -217.65$, $p < 0.01$).

Concomitantly, the mean BMI demonstrated a dramatic clinical improvement. From a morbidly obese preoperative baseline of 42.61 ± 1.48 kg/m², the mean BMI fell to 31.67 ± 1.62 kg/m² at the 24-week evaluation. This reduction in BMI was statistically significant ($t = -27.15$, $p < 0.01$), successfully shifting the mean population profile out of the class III (morbid) obesity categorization within a mere half-year timeframe.

Table 3: Changes in HbA1c and Lipid Parameters during Follow-up (n = 20)

Parameter	Preoperative	4 Weeks	12 Weeks	24 Weeks	F-value†	p-value
HbA1c (%)	8.03 ± 0.77	-	7.22 ± 0.51	6.29 ± 0.37	-52.50	< 0.01*
Triglycerides (mg/dL)	175.15 ± 15.74	163.20 ± 12.85	131.47 ± 9.08	112.70 ± 7.23	-395.63	< 0.01*
Total Cholesterol (mg/dL)	200.40 ± 13.52	189.70 ± 9.40	168.25 ± 10.53	155.75 ± 9.05	-369.06	< 0.01*

Significant physiological improvements were recorded in systemic metabolic markers. [Table 3] Preoperative glycemic evaluation revealed a mean HbA1c of 8.03 ± 0.77%, indicative of uncontrolled baseline metabolic disease. Postoperatively, a marked, progressive decline in HbA1c was observed, falling to 7.22 ± 0.51% by 12 weeks and further normalizing to 6.29 ± 0.37% at 24 weeks. This glycemic correction was statistically significant ($F = -52.50$, $p < 0.01$).

The lipid profiles exhibited a similarly favorable and statistically robust trajectory. Mean serum triglycerides decreased sequentially from an elevated baseline of 175.15 ± 15.74 mg/dL to 163.20 ± 12.85 mg/dL at 4 weeks, 131.47 ± 9.08 mg/dL at 12 weeks, and 112.70 ± 7.23 mg/dL at 24 weeks ($F = -395.63$, $p < 0.01$). Furthermore, mean total cholesterol was substantially reduced, dropping from 200.40 ± 13.52 mg/dL preoperatively to 189.70 ± 9.40 mg/dL at 4 weeks, 168.25 ± 10.53 mg/dL at 12 weeks, and finally settling at 155.75 ± 9.05 mg/dL at the end of the follow-up period ($F = -369.06$, $p < 0.01$).

Table 4: Changes in Hepatic Transaminases during Follow-up (n = 20)

Parameter	Preoperative	4 Weeks	12 Weeks	24 Weeks	F-value†	p-value
AST (U/L)	42.12 ± 13.88	41.74 ± 13.14	41.21 ± 12.07	40.18 ± 9.20	-1.89	0.142
ALT (U/L)	43.90 ± 22.18	40.97 ± 17.13	37.20 ± 14.09	32.00 ± 7.61	-10.89	< 0.01*

Hepatic transaminase responses varied following the onset of rapid weight loss, illustrating complex physiological adaptations within the liver parenchyma. Mean AST levels experienced a minimal, statistically insignificant decline from 42.12±13.88 U/L preoperatively to 41.74±13.14 U/L at 4 weeks, 41.21±12.07 U/L at 12 weeks, and 40.18±9.20 U/L at 24 weeks ($F=-1.89$, $p=0.142$).

Conversely, mean ALT levels demonstrated a highly significant, progressive reduction throughout the study. Starting from a baseline of 43.90±22.18 U/L, ALT levels dropped to 40.97±17.13 U/L at 4 weeks, 37.20±14.09 U/L at 12 weeks, and ultimately to 32.00±7.61 U/L at 24 weeks ($F=-10.89$, $p<0.01$), serving as a definitive indicator of the rapid amelioration of specific hepatocellular stress post-intervention.

Table 5: Early and Late Postoperative Complications (n = 20)

Complication Category	Specific Complication	Frequency (n)	Percentage (%)
Early Complications (≤ 30 days)	Wound infection	2	10.0
	Bleeding per rectum	1	5.0
	Deep vein thrombosis	1	5.0
	Non-specific vomiting	1	5.0
	None	15	75.0
Late Complications (> 30 days)	Diarrhea (Dumping syndrome)	2	10.0
	Marginal ulcer	1	5.0
	Small bowel obstruction (required reoperation)	1	5.0
	None	16	80.0

The incidence of both early and late surgical complications was systematically recorded and categorized. The OAGB/MGB procedure was generally well-tolerated, with a significant majority of patients (n=15, 75.0%) experiencing no early postoperative complications. Among the subset of patients affected by early adverse events, the most frequently observed complication was superficial wound infection, which occurred in 2 patients (10.0%). More severe early complications included isolated instances of bleeding per rectum (n=1, 5.0%), deep vein thrombosis (n=1, 5.0%), and non-specific severe vomiting (n=1, 5.0%).

Regarding late complications– defined as those emerging beyond 30 days postoperatively– 16 patients (80.0%) reported an entirely uneventful long-term clinical recovery. The most prominent late issue was diarrhea attributable to dumping syndrome, noted in 2 patients (10.0%). Marginal ulceration, a known risk of the unbuffered gastrojejunostomy, was diagnosed in 1 patient (5.0%). Additionally, 1 patient (5.0%) developed a mechanical small bowel obstruction that necessitated subsequent surgical reoperation for resolution.

DISCUSSION

Principal Findings The present study robustly confirms that laparoscopic one-anastomosis gastric bypass (OAGB/MGB) is a highly effective, multifaceted surgical intervention for the treatment of morbid obesity. Over a 24-week postoperative follow-up period, the procedure induced rapid, linear, and profound weight loss, culminating in an absolute mean BMI reduction of nearly 11 kg/m². Concurrently, the anatomical modifications successfully and rapidly reversed critical elements of the metabolic syndrome, demonstrated by highly significant and progressive reductions in HbA1c, serum triglycerides, total cholesterol, and ALT levels. Although the vast majority of patients recovered without severe sequelae, a discrete subset experienced notable early and late surgical complications, emphasizing the procedure's inherent physiological impacts and localized anatomical risks.

Weight and BMI Dynamics the profound weight reduction and progressive BMI decline observed within the first six months postoperatively underscore the formidable combined restrictive and malabsorptive mechanics of OAGB. Parmar CD et al. in 2016, at United Kingdom, reported a highly comparable early trajectory of profound weight reduction following OAGB.[13] This similarity is likely attributable to the elongated tubular structure of the gastric pouch (constructed to 15–18 cm in the current study), which physically limits caloric intake while simultaneously preserving physiological tension against the lesser curvature to stimulate early satiety stretch receptors. The clinical implication is that the surgical principles of OAGB provide highly reproducible, potent restriction across diverse international cohorts.

Furthermore, the substantial velocity of weight loss observed in this tertiary setting aligns with established subcontinental evidence. Kular KS et al. in 2014, at India, reported an aggressive reduction in excess body weight following MGB in a large regional cohort.[23] The findings of the present study tightly mirror these robust national data, highlighting that the genetic, dietary, and phenotypic parameters unique to the Indian morbidly obese population– often characterized by high central adiposity and severe metabolic inertia– are highly responsive to the specific OAGB architecture utilizing a 180 cm biliopancreatic limb. Bypassing this precise length of the proximal intestine effectively limits lipid and complex carbohydrate absorption without universally plunging the patient into severe protein-calorie malnutrition, striking an optimal balance for rapid initial weight clearance.

Even when assessing varying institutional volumes, the efficacy remains consistently strong. Jammu GS et al. in 2016, at India, reported that OAGB consistently matched or exceeded the weight-loss trajectories of standard RYGB and sleeve gastrectomy across a 7-year clinical audit.[24] While the present study operates on a shorter follow-up timeline and smaller sample size, the identical early downward slope of the weight curve validates the immediate mechanical reliability of the omega-loop configuration to overcome profound metabolic resistance, yielding a definitive clinical advantage for complex obesity phenotypes. Glycemic Outcomes The precipitous drop in HbA1c from a poorly controlled mean of 8.03% to a nearly normalized 6.29% within a mere 24 weeks cannot be explained by caloric restriction or weight loss alone, pointing strongly to weight-independent incretin mechanisms. Akool MA et al. in 2021, at Iraq, reported remarkably similar precipitous drops in glycemic indices following MGB.[14] This similarity is likely driven by the rapid transit of undigested nutrient chyme into the distal bowel, which alters the neuroendocrine axis and restores metabolic sensitivity. This rapid hormonal shift dramatically curtails hepatic gluconeogenesis, presenting an immense clinical implication for the curative intent of type 2 diabetes in obese patients. This early hormonal surge rapidly restores pancreatic beta-cell sensitivity and dramatically curtails hepatic gluconeogenesis, presenting an immense clinical implication for the curative intent of type 2 diabetes in obese patients. Moreover, Ruiz-Tovar J et al. in 2019, at Spain, reported that OAGB consistently outperformed standard sleeve gastrectomy in the mid-to-long-term remission of type 2 diabetes.[16] Our observation of early glycemic normalization aligns seamlessly with their findings, implying that the deliberate bypass of the duodenum (which aligns with the "foregut hypothesis" by halting the release of putative anti-incretin factors) is a critical anatomical requirement for maximizing the metabolic potential of bariatric surgery. The procedure effectively recalibrates the entero-insular axis well before maximal weight loss is achieved.

Lipid Outcomes the systemic lipid profile saw exceptional and rapid correction, characterized by profound, linear reductions in both triglycerides and total cholesterol. Migliore E et al. in 2021, at Italy, reported significant overall reductions in systemic cardiovascular and lipid risk markers following diverse bariatric interventions.[17] The rapid triglyceride and cholesterol clearance observed in the current study likely stems from the physical exclusion of the primary absorptive mucosal surface for dietary fats (the duodenum and proximal jejunum). Furthermore, the delayed mixing of bile salts and pancreatic lipases with the alimentary stream until the 180 cm gastrojejunostomy profoundly alters lipid kinetics. This mechanism reduces systemic lipotoxicity and dramatically lowers immediate atherosclerotic risk, providing immediate cardioprotective benefits to a vulnerable population. In a comprehensive analysis of gastric bypass outcomes, Misra

S et al. in 2020, at India, reported similarly drastic and sustained corrections in severe dyslipidaemia following RYGB.[18] The comparable lipid normalization seen in our OAGB cohort suggests that the single-anastomosis omega-loop achieves equivalent physiological lipid malabsorption to the dual-anastomosis Roux-en-Y configuration. Clinically, this simplifies the operative burden for the surgeon while securing the requisite cardiovascular protection for the patient. For patients presenting with medically refractory hyperlipidaemia, OAGB serves as a potent physiological reset. Liver-Related Outcomes Hepatic function experienced a divergent but highly informative response; ALT dropped significantly (from 43.90 to 32.00 U/L), whereas AST remained relatively static and unchanged. Poublon N et al. in 2020, at Netherlands, reported that OAGB yields superior metabolic and visceral fat clearance metrics when utilized as a powerful metabolic tool.[19] The significant drop in ALT in our study correlates tightly with the rapid mobilization of ectopic hepatic lipid stores (steatosis). The significant drop in ALT in our study correlates tightly with the rapid mobilization of ectopic hepatic lipid stores (steatosis). This rapid decline suggests that OAGB profoundly reverses early liver parenchymal stress associated with severe obesity. Interestingly, Almalki OM et al. in 2018, at Saudi Arabia, reported extensive physiological shifts during post-surgical metabolic recovery across bypass procedures.[20] The lack of a significant drop in AST in the present study may be attributed to AST's widespread presence in extrahepatic tissues, notably skeletal and cardiac muscle. During the rapid catabolic phase of massive surgically-induced weight loss, mild transient skeletal muscle breakdown often occurs, which can maintain peripheral AST levels and temporarily mask the concurrent hepatic recovery. Clinically, this highlights that while ALT is an excellent short-term surrogate for hepatic steatosis resolution, AST kinetics must be interpreted with caution during periods of extreme caloric deficit. Complications Although 75% of patients avoided early complications, 10% suffered superficial surgical site infections, and isolated severe events such as DVT and hemorrhage occurred. Musella M et al. in 2017, at Italy, reported in a massive multi-institutional survey that early complication rates for OAGB hover near 3.1%, with a distinct learning-curve dependency.[21] The slightly higher 10% wound infection rate in our cohort may reflect distinct regional variations in skin flora, higher baseline diabetic immunosuppression, or environmental factors inherent to the tertiary care setting. This difference emphasizes that rigid preoperative glycemic optimization and precise intraoperative sterility protocols are paramount when implementing OAGB in resource-variable settings to minimize superficial morbidity. Regarding late complications, the present study encountered a 5% incidence of mechanical small bowel obstruction requiring surgical reoperation. Ghosh S et al. in 2017, at Australia, reported an appreciable incidence of late anatomical complications requiring intervention following OAGB procedures.[22] The occurrence of an obstruction in our cohort– despite the routine closure of Petersen's space with silk sutures– highlights that the antecolic omega-loop remains susceptible to torsional forces, adhesive bands, or herniation through disrupted mesenteric closures. The clinical implication dictates that surgeons must maintain a high index of suspicion for bowel ischemia or internal herniation in any post-OAGB patient presenting with acute abdominal pain, prioritizing rapid cross-sectional imaging and early diagnostic laparoscopy.

Finally, late dumping syndrome (10%) and marginal ulceration (5%) underscore the physiological compromises of the altered anatomy. Mognol P et al. in 2004, at France, reported similar rates of marginal ulceration and anastomotic issues in complex bypass procedures.[25]

The incidence of marginal ulcers in the present study aligns closely with global registry expectations for OAGB. Because the jejunal mucosa at the gastrojejunostomy is directly exposed to unbuffered gastric acid from the elongated gastric pouch, avoiding risk factors such as cigarette smoking and NSAIDs, alongside the use of prophylactic proton-pump inhibitor (PPI) therapy, are recognized clinical strategies to mitigate this ulcerative risk.[7,8]

Furthermore, the revisional capacity of OAGB remains strong. Mouawad C et al. in 2024, at Lebanon, reported that OAGB operates as a highly successful revisional procedure following failed primary restriction,[15] underscoring the anatomical versatility of the omega loop.

Strengths and Limitations

The primary strength of this study lies in its rigorous, prospective tracking of a homogenous regional cohort through multiple predefined strict clinical time points, preventing significant data attrition and allowing for an accurate calculation of the early metabolic trajectory. However, limitations must be acknowledged. The sample size is inherently small (n = 20), which restricts the statistical power required for multivariate regression analysis to isolate specific predictors of weight loss failure. Furthermore, the relatively short follow-up duration (24 weeks) prevents the evaluation of long-term nutritional deficiencies (e.g., severe hypoproteinaemia, osteopenia, anaemia) or late weight regain. Finally, the absence of a parallel control group undergoing RYGB or sleeve gastrectomy inherently limits direct comparative statistical superiority claims against other established procedures.

CONCLUSION

Laparoscopic one-anastomosis gastric bypass (OAGB/MGB) represents a highly efficacious, dual-mechanism bariatric intervention capable of inducing profound and rapid weight loss in morbidly obese patients. Over a 24-week period, the procedure fundamentally reversed severe metabolic syndrome, delivering highly significant improvements in systemic glycaemic control (HbA1c), lipid parameters (triglycerides and cholesterol), and specific hepatocellular stress markers (ALT). While the anatomical simplification offers substantial technical benefits, the occurrence of early infective/thromboembolic events and late mechanical/ulcerative complications necessitates scrupulous surgical technique and unyielding postoperative surveillance. Ultimately, OAGB/MGB stands as a robust weapon in the bariatric armamentarium, offering life-altering metabolic remission when applied within carefully selected and rigorously monitored clinical populations.

Ethical Approval: The protocol was approved by the Institutional Ethics Committee of M.G.M. Medical College and M.Y. Hospital, Indore. All procedures performed were in accordance with the ethical standards of the institutional research committee and the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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