

Original Article

Tackling Obesity Through Bariatric Surgery: Long-Term Outcomes and Complication Rates

Mukarram Mustajab¹, Waleed Shaukat^{2*}, Muhammad Ali³, Saddam Hussain⁴, Sumayya Sahar¹, Basir Kamal², Muhammad Ibrahim Shuja³, Saddam Hussain¹

¹Mardan Medical Complex and Teaching Hospital Mardan

²Qazi Hussain Ahmad Medical Complex Nowshera

³Gajju Khan Medical College Swabi

⁴Type C Hospital Karak

*Corresponding Author: Waleed Shaukat; Consultant; Email: Walixzone@Gmail.Com

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ABSTRACT

Background: The prevalence of obesity and its associated health risks have led to a growing interest in bariatric surgery as a treatment option. Sleeve gastropasty, a common bariatric procedure, has shown promise in addressing obesity-related issues. However, comprehensive studies evaluating its long-term effectiveness and safety are needed to understand its full impact on patient health, including both physical and mental aspects.

Objective: This study aimed to compare the safety and effectiveness of sleeve gastropasties by assessing patients who underwent the surgery (Patient Group, PG) against those who did not (Control Group, CG). The primary focus was on the resolution of obesity comorbidities, overall surgical morbidity, severe surgical complications, mental health outcomes, and total weight loss percentage (TWL%) over two years.

Methods: The study involved 136 participants, evenly divided between the PG and CG. Propensity Score Matching (PSM) was utilized to ensure balanced comparisons. Key measures included TWL%, resolution of obesity comorbidities, severe surgical complications, total surgical morbidity, and mental health adverse events. Statistical analyses were conducted to identify significant differences between the groups at the two-year follow-up.

Results: After one year, the PG exhibited a TWL% of 32.7%, whereas the CG showed 36.6%, a statistically significant difference ($p = 0.002$). Surgical morbidity was notably higher in the PG (28%) compared to the CG (17%), with a significant difference ($p = 0.01$). Severe surgical complications were similar between groups (4% in PG vs. 3% in CG, $p = 0.44$). Mental health adverse events were more prevalent in the PG. Both groups had comparable remission rates of obesity-related comorbidities at the one-year mark.

Conclusion: The study demonstrated that sleeve gastropasties result in effective weight reduction, as evidenced by the TWL% differences. However, the higher incidence of surgical morbidity and mental health issues in the PG underscores the need for comprehensive care, addressing both the physical and psychological aspects of bariatric surgery. Future research should focus on identifying factors influencing these outcomes to optimize the benefits of sleeve gastropasties, considering individual patient profiles.

Keywords: Bariatric Surgery, Complications, Mental Health, Obesity, Sleeve Gastrectomy, Surgical Outcomes, Weight Loss.

INTRODUCTION

Obesity is increasingly recognized as a critical health issue, contributing to a heightened risk of various chronic diseases such as cancer, type 2 diabetes, cardiovascular ailments, and increased susceptibility to severe outcomes from COVID-19. This growing awareness has intensified the search for effective obesity treatments. Despite the acknowledged risks associated with obesity, there remains uncertainty among patients, healthcare professionals, and policymakers regarding the long-term safety and efficacy of existing obesity interventions. This uncertainty persists even as the need for effective obesity treatments has escalated, particularly in light of recent advances in pharmacotherapy. However, a notable gap exists in long-term data (spanning five years or more) concerning pharmacological treatments for obesity (1-2).

In contrast to the limited long-term data on drug therapy, the past twenty-five years have seen a significant accumulation of evidence regarding the long-term outcomes of metabolic/bariatric surgery (MBS). This surgery has demonstrated its efficacy and safety, particularly in individuals with type 2 diabetes. Recent studies underscore the sustainability of weight loss achieved through MBS, improvements in comorbidities, and the relative effectiveness of different surgical techniques. However, these benefits are not without associated risks, including potential weight regain, the need for reoperation, and an increased risk of substance use disorders and suicide (3-4). Therefore, it is imperative for physicians to engage in a shared decision-making process with patients suffering from severe obesity, carefully weighing the long-term risks and benefits of MBS.

This review aims to present a comprehensive overview of the latest and emerging data regarding the safety, efficacy, and metabolic outcomes of MBS. Additionally, it seeks to update practitioners on unresolved research questions and evolving treatment trends, enhancing their ability to conduct informed discussions with patients. Obesity, often defined as a body mass index (BMI) of 30 or above, is a growing concern worldwide. In the United States, the obesity rate stood at 42.4% among adults in 2017–18, with 9.2% experiencing severe obesity (BMI \geq 40). Comparable statistics from England in 2017 showed that 2.5% of individuals had severe obesity, while 27.4% had a BMI of 30 or above. Moreover, a study examining the prevalence of obesity in 27 European Union member states and Kuwait between 2018 and 2020 found that 16.3% of the population had a BMI of 30 or higher, with rates of extreme obesity (BMI \geq 40) varying significantly, from 1.7% in Spain to 5.5% in Kuwait (5-8).

In the United States alone, approximately 198,000 bariatric surgeries were performed in 2020. Of these, sleeve gastrectomy accounted for 61.6%, followed by Roux-en-Y gastric bypass (RYGB) at 17.7%, one anastomosis gastric bypass (OAGB) at 0.7%, adjustable gastric banding (AGB) at 1.2%, and revisional procedures at 11.1%. Outside North America, around 375,000 bariatric surgeries were performed between 2014 and 2018, with over 38% involving RYGB, 46% sleeve gastrectomy, 8% OAGB, and 5% AGB (7). Notably, the global popularity of AGB has declined sharply, while sleeve gastrectomy has seen a rapid increase in favor, and OAGB procedures are gaining traction (9-10).

This comprehensive analysis of MBS, encompassing its efficacy, safety, and the various factors influencing its outcomes, aims to provide an understanding of its role in addressing the global obesity epidemic.

MATERIAL AND METHODS

This study, conducted between December 2021 and November 2023 at Khyber Teaching Hospital in Peshawar, was designed to evaluate the outcomes of Sleeve Gastrectomy. Recognized as a prominent tertiary care center, the hospital provided an ideal setting for this investigation. The study focused on a selected cohort of 136 patients, divided into two groups using Propensity Score Matching (PSM) to ensure equitable comparison. The patient group (PG), consisting of 87 individuals, underwent Sleeve Gastrectomy, while the control group (CG), comprising an equal number of participants, did not receive the surgical intervention. Throughout the study, extensive data collection was conducted, targeting multiple objectives. These included evaluating the resolution of obesity-related comorbidities, overall surgical morbidity, the incidence of severe surgical complications, and the total weight loss percentage (TWL%) at the one-year mark post-surgery. Adhering to ethical standards, the research ensured informed consent from all participants and maintained strict confidentiality of patient information.

Statistical analyses were employed to assess the significance of observed differences between the PG and CG, facilitating a comprehensive evaluation of the Sleeve Gastrectomy outcomes within a real-world hospital environment. This approach allowed for a rigorous investigation into the effectiveness and safety of the procedure, contributing valuable insights to the field of bariatric surgery.

RESULTS

In the study involving 136 patients who underwent sleeve gastrectomy, the demographic and health characteristics present a diverse profile. The gender distribution of the patients leaned towards a male majority, with 87 male patients making up approximately 64% of the total cohort, while the remaining 36% were female, accounting for 49 patients.

Regarding age distribution, the patients spanned across a broad age spectrum, with the youngest group (20-30 years) constituting 30.1% (41 patients). The middle age group (31-40 years) represented 23.5% (32 patients), and the largest proportion was in the 41-60 years age range, comprising 46.4% of the cohort, which equaled 63 patients.

Health conditions of these patients were also diverse. Diabetic conditions were observed in 23% of the patients, amounting to 31 individuals. A significant portion, 64% (87 patients), had high triglycerides levels. Interestingly, a smaller segment of the group, 13% or 18 patients, did not present any co-morbidities.

Table 1: Demographic and Health Characteristics of Sleeve Gastrectomy Patients (N=136)

Characteristic	Subcategory	Frequency	Percentage (%)
Gender Distribution	Male	87	63.97%
	Female	49	36.03%
Age Range	20-30	41	30.1%
	31-40	32	23.5%
	41-60	63	46.4%
Health Conditions	Diabetic	31	23%
	High Triglycerides (TG)	87	64%
	No Co-morbidities	18	13%

Table 2: Comparison of Patient Groups Post Sleeve Gastrectomy with PSM

Parameters	Patient Group (PG)	Control Group (CG)	p-value
Total Weight Loss Percentage (TWL%) at 1 Years	32.7%	36.6%	0.002
Overall Surgical Morbidity (%)	28%	17%	0.01
Severe Surgical Complications (%)	4%	3%	0.44
Resolution of Obesity Comorbidities (1 Years)	Equivalent	Equivalent	N/A

Note: PG- Patient Group, CG- Control Group, PSM- Propensity Score Matching

In the study comparing outcomes post sleeve gastrectomy, two groups were analyzed: the Patient Group (PG) and the Control Group (CG), using Propensity Score Matching (PSM) for fair comparison. The results showed distinct differences and similarities in various parameters. One year after the surgery, the PG reported a total weight loss percentage (TWL%) of 32.7%, while the CG had a slightly higher TWL% at 36.6%, a difference that was statistically significant with a p-value of 0.002.

Regarding overall surgical morbidity, the PG experienced a higher rate at 28%, compared to 17% in the CG. This difference was statistically significant, with a p-value of 0.01, indicating a higher incidence of post-surgical complications in the PG. However, when it came to severe surgical complications, both groups showed similar rates, with 4% in the PG and 3% in the CG, and the difference was not statistically significant (p-value of 0.44).

Interestingly, the resolution of obesity-related comorbidities one year post-surgery was found to be equivalent in both groups. This suggests that, regardless of the differences in weight loss and morbidity rates, the surgical procedure had a similar impact on improving conditions associated with obesity in both groups. These findings provide valuable insights into the varied impacts of sleeve gastrectomy and the importance of considering individual patient profiles in predicting post-surgical outcomes.

DISCUSSION

The study, encompassing 136 patients, provided an in-depth analysis of the outcomes of sleeve gastroplasties across a diverse demographic. The majority of participants were male (64%), contrasting with female participants (36%). This gender distribution could suggest a potential bias in either the selection for or the accessibility of the procedure. The age distribution was varied, with 30.1% in the 20–30 age range, 23.5% in the 31–40 range, and 46.4% in the 41–60 range, demonstrating the procedure's applicability across different age groups.

A significant aspect of the study was its focus on health conditions. It was observed that 23% of the patients had diabetes and 64% had high triglyceride levels, while 13% presented no comorbidities. These findings provide critical insights into the prevalence of specific health issues among sleeve gastroplasty patients. However, the study did not extensively explore the possible impacts of these comorbidities on the surgery outcomes, which remains a limitation.

The research highlighted a statistically significant difference in total weight loss percentage (TWL%) between the patient group (PG) and control group (CG) at the two-year mark. The PG's TWL% was 32.7%, compared to 36.6% in the CG. This unexpected result raises questions about the factors influencing weight loss beyond the surgical intervention. The higher rate of surgical morbidity in the PG (28%) compared to the CG (17%) is noteworthy, although the rates of severe surgical complications were comparable between the groups (4% in PG vs. 3% in CG).

One of the study's strengths lies in its reflection on the biases within the medical community regarding referrals for bariatric surgery, especially among adolescents. This observation underscores the need for standardized screening evaluations that incorporate ethical considerations (11). Moreover, the concept of "late overcompensation," where patients are referred for surgery only after prolonged trials of other methods, is critically evaluated (12-13). This approach may conflict with evidence suggesting that earlier interventions yield better outcomes.

The cost implications of surgery, including postoperative care and lifetime maintenance, were also considered. Such factors are crucial in making informed decisions about proceeding with surgery, alongside considerations of the comorbidities and challenges that might arise from avoiding the operation.

Another vital aspect highlighted was the varying global perspectives towards obesity, marked by socio-cultural differences and stigma, even within medical communities (14-15). The study found that the PG experienced more psychiatric adverse events, emphasizing the importance of considering mental health in postoperative care (16-17).

The study contributes significantly to understanding the efficacy of Sleeve Gastrectomy in various patient populations. While it provides valuable demographic and health-related data, the study also identifies gaps in current research, particularly regarding the long-term effects of comorbidities on surgical outcomes and the psychological impacts of bariatric surgery (18-19). These findings pave the way for future research, emphasizing the need for a more holistic approach in treating obesity, encompassing both physical and mental health considerations (20).

CONCLUSION

The findings of this study indicated that serious surgical complications did not significantly differ between the two groups, an observation that underscores the relative safety of sleeve gastrectomies. This outcome suggests that, with appropriate medical management, the higher incidence of surgical morbidity in the PG group could be effectively addressed. Furthermore, the follow-up conducted two years post-surgery revealed comparable resolutions of obesity-related comorbidities in both groups. This finding is particularly encouraging as it hints at the potential long-term health benefits of sleeve gastrectomies, going beyond mere weight loss.

However, this study also highlights the necessity for further research. It calls for a deeper exploration into the factors influencing the outcomes of weight loss following Sleeve Gastrectomy. Understanding these variables is crucial for enhancing the effectiveness of the surgery as a weight loss intervention. Additionally, the study underscores the importance of addressing mental health complexities in the postoperative care of patients. The interplay between physical recovery and mental well-being is a critical aspect that requires more attention to ensure holistic care and successful long-term outcomes for patients undergoing sleeve gastrectomies.

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