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# OPTIMIZING SURGICAL OUTCOMES IN LAPAROSCOPIC SLEEVE GASTRECTOMY THE ROLE OF STAPLE LINE OVERSEWING IN ENHANCING PATIENT SAFETY AND EFFICACY

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**ABSTRACT:**

**Purpose:** This paper aims to compare staple line oversewing concerning postoperative complications, patient satisfaction and cost-effectiveness in a laparoscopic sleeve gastrectomy (LSG) setting. Since there is still controversy about the utilization and efficiency of staple line reinforcement, the present paper attempts to present data that would complement common knowledge.

**Objective:** The primary objectives are to determine whether staple line oversewing reduces the incidence of postoperative leaks and bleeding, enhances better management of patient pain and satisfaction rates and identifies cost-effectiveness in Laparoscopic sleeve gastrectomy (LSG) procedures.

**Methodology**: In the current study, quantitative, cross-sectional research was used, and the study recruited 210 Laparoscopic sleeve gastrectomy (LSG) patients. Thrown for structured questionnaires and medical records were also analyzed, if any. To evaluate the effect of staple line oversewing, various descriptive statistical tests such as Independent Samples T-Tests, Mann-Whitney U Tests, Pearson Correlation and inferential statistical test Logistic Regression were used. Furthermore, the study also engaged in data visualizations with the application of bar plots, box plots, scatter plots, and coefficient plots for purposes of comparing the results of the interventions between groups and testing the strength in association with the variables. The evaluation of cost-effectiveness was done utilizing the cost-benefit analysis considering such costs that might be directly and indirectly linked with the procedure.

**Results:** By analyzing the experimental results, the researchers have found out that there was no statistically significant difference between the two groups; the oversewing group and the no oversewing group, so the result was calculated with the p-value of 0.284. Likewise, the rate of bleeding was also in a similar percentage (p=0.337). The level of pain management did not reach statistically significant whether oversewn or not (mean difference 0.2 p 0.412); similarly, the overall patient satisfaction was similar (median difference 0.3 p= 0.465). Thus, Pearson correlation analysis

showed that age was not related to pain management scores r = -0.05 p = 0.721. The Statistical test applied logistic regression and revealed that age has a significant relationship with Postoperative Complication (Odds Ratio= 1.75, p=0.041); however, BMI category and oversewing were not found to have any significant relationship. The cost advantage study showed that the added cost of oversewing as compared to the standard suture was not compensated by reduced costs due to complications, thereby reporting very slight economic merits of oversewn sutures (p= 0.589). The bar graph and Box graph further ensured that differences in the results of processes involving oversewing and non-overswinging were also statistically insignificant**.**

**Practical Implications:** This indicates that perhaps staple line oversewing is not needed in every Laparoscopic sleeve gastrectomy (LSG) as there was no substantial decrease in the complications and proved to be financially unwise. It can be suggested that, based on these results, surgeons should base their decisions related to oversewing on several risk factors of a specific patient and use the method mostly where the possibilities of complications are higher. **Novelty:** Taking a closer look at Laparoscopic sleeve gastrectomy (LSG), this work discusses the necessity of utilizing staple line oversewing, as well as its effectiveness and influence on patients' outcomes and the healthcare cost and raises a question about the rationale of such an untamed practice in Laparoscopic sleeve gastrectomy (LSG).

**Conclusion:** Oversew of the staple line in laparoscopic sleeve gastrectomy is not of great value because it does not decrease postoperative complications, there is almost no difference in patient-reported outcomes and does not save many costs. Such studies indicate that targeted application of this technology based on the patient's characteristics may be more suitable than conventional approaches. Future work is still required to provide more effective guidelines and develop best Surgical practices in Laparoscopic sleeve gastrectomy (LSG).

**KEYWORDS**: Laparoscopic sleeve gastrectomy; Staple line oversewing; postoperative complications; surgical efficacy; bariatric surgery; patient-reported outcomes; cost-effectiveness; surgical reinforcement; obesity surgery; clinical practice.

## INTRODUCTION:

Laparoscopic sleeve gastrectomy (LSG) is among the most successful operations for weight loss and obesity, a disease that is on the rise across the world and adversely affects millions of people and health care facilities globally. Obesity is becoming more rampant and with it, its complications, which include type 2 diabetes, hypertension, and cardiovascular diseases have made it important to find viable approaches to the management of this condition. Among the many biliopancreatic diversions (BPD), Sleeve gastrectomy (SG) the Laparoscopic sleeve gastrectomy (LSG) is chosen because of the ease of performing the surgery, the effectiveness of weight loss and decrease in obesity-related comorbidities. However, as it is well known that every surgical procedure comes with its risks, LSG is not an exception to this rule. The major complication related to LSG includes the issue of staple line integrity which is so central to the effectiveness of the surgery and the post-surgery well-being of the patient. Injuries to the the staple line, bleeding, and other mishaps may grow to critical conditions, which require additional surgeries, and prolonged hospitalizations, and sometimes result in life-endangering conditions (Niaz et al., 2024).

Due to the tremendous significance of the staple line, there has been much enthusiasm for developing approaches to reinforce the staple line, including the staple line oversewing technique that has prompted interest in the last few years. There is controversy regarding the value of the staple line oversewing in the practice of LSG. Staple line oversewing involves the placement of sutures along the staple line to have better control of the staple line to minimize leakage and, bleed amongst other complications. Though some surgeons stir assertively for the necessity of oversewing for additional protection of the patients, the other side is still claiming that oversewing may be more time-consuming during the operative time, lead to the formation of strictures and have no predictable added advantage over other reinforcements. Several research studies have revealed

significant variability in surgical practices for staple line oversewing because of the inability of past researchers to determine the best practices regarding the deployment of staple line oversewing (Subedi, Suhail, Singh, & Adler, 2024).

Our study also observed variability in the performances of Staple Line oversewing because some surgeons prefer performing oversewing, some perform other reinforcement methods while, yet others avoid stapler line reinforcement. These findings warrant additional studies aiming at better understanding the advantages and disadvantages of staple line oversewing, especially toward enhancing the outcomes of the LSG operation and patients' safety. The central research question used in this study is: What are the uncertainties in determining if staple line oversewing positively impacts on safety and efficiency of the laparoscopic sleeve gastrectomy? More precisely, the research aims to identify whether staple line oversewing reduces the rates of postoperative complications concerning leaks and bleeding on the staple line, as well as whether this practice can positively influence the pain management, satisfaction, and quality of life of the patients. Furthermore, the study seeks to review the cost-effectiveness of staple line oversewing and possible savings through reduction in costs occasioned by complications and incremental costs through operative time and other necessities of the technique. Answering these questions, the study expects to contribute to the best evidence-based practice for LSG suggesting recommendations to surgeons concerning the usage of staple line oversewing (Belluzzi et al., 2024).

Three research questions have been developed to guide this study to achieve its research objectives. First, the prior objective of this study is to evaluate the effectiveness of staple line oversewing towards the rate of post-LSG complications. This objective therefore requires a detailed examination of the kind of patients that the PHC can expect to deal with, and the nature and frequency of the complications that may present including staple line leaks, bleeding and infections among others. Second, it aims to assess the impact of staple line oversewing on a patient's perception of his/her pain management, general satisfaction with the surgery, and post-surgery quality of life. These outcomes are important for revealing the effects associated with the given technique on patients' quality of life and further health. Third, it is intended to make a cost-effectiveness assessment of staple line oversewing through financial costs and clinical outcomes implicated with the technique together with the costs of complications potentially saved (Dalkılıç, Gençtürk, Şişik, & Erdem, 2024).

Thus, the following objectives have been considered foundational for the study and are as follows: By accomplishing these objectives, the study aims to provide useful information to the continuing research regarding the over-sewing of staple lines in LSG and to direct future studies and practice in this field. The approach used in this study is envisaged to offer a robust approach to the analysis and evaluation of the research questions. The research method that is used in the study is a quantitative research technique that uses a cross-sectional survey to accumulate information from a Sample of patients who have undergone LSG. This means the utilization of closed-ended questionnaires that incorporate clinical and self-reported measures and, a review of patients' records to determine postoperative adverse events and their monetary implications. The magnanimity of participants and the method through which they are chosen to participate in the study are well thought out to ensure that the results that are obtained from the study are representative of other LSG patients in the community (Tish & Corcelles, 2024).

Independent Samples T-Tests, Mann-Whitney U Tests, Pearson correlation and Logistic Regression were employed to conclude the effectiveness of staple line oversewing. The findings from these analyses are then applied to the recommendations made by the study for clinical practice. This approach to structuring the paper is to ensure that the flow of ideas is coherent throughout the paper, and hence the following development of the paper starts with a literature review on LSG and staple line reinforcement methods. This is then followed by the Methodology section which presents an overview of the type of study conducted, how data was collected and the analysis that was undertaken. This section is dedicated to the details of the investigation and the specific outcomes which are associated with staple line oversewing concerning postoperative emergencies, the

subjective perception of the patient, and the expenditures on the surgery. The last section, the 'discussion', translates the findings to the body of knowledge, discusses the implications for practice and generates ideas for subsequent research (Masood, Low, Deal, & Kozarek, 2024b).

Last, the final section presents the implication of the study, restates the relevance of the research topic, and proffers recommendations for surgeons as well as other healthcare practitioners who manage patients who have undergone LSG. Therefore, this work fills a substantial research gap towards understanding the utility of staple line oversewing in laparoscopic sleeve gastrectomy in enriching patient safety features and improving surgical outcomes. Thus, by evaluating the effect of oversewing on postoperative complications, patient-reported outcomes, and costs, the study provides relevant information for clinical recommendation and future work toward improving surgical treatment for obese patients. It is through this study that the present work aims to elucidate the various advantages and disadvantages of staple line oversewing and to assist surgical practitioners in arriving at the right decisions to enhance patient care and safety during LSG (Gormsen et al., 2024).

## LITERATURE REVIEW:

A fairly large body of literature has entered the public domain in the recent past as more and more supporters opt for laparoscopic sleeve gastrectomy (LSG) as a treatment method for obesity and its complications. Due to its effectiveness in achieving significant and profound weight loss, amelioration of obesity-associated disorders, and overall improvement of patient's well-being, LSG has become conventional. However, as with any other operation, LSG has its benefits and harms, as well as possible consequences in the form of complications. Of all the factors that determine surgical outcomes, the integrity of the staple line is most important since it determines the frequency of leaks, bleeding or infections after the surgery. This has resulted in increased attention on finding ways to augment the stapler line, especially the staple line oversewing as a means of boosting safe surgery for patients. As has been outlined in prior studies, securing the staple line plays a critical role in the LSG procedure. Even though the incidence of leaks is a rare complication of LSG, it is one of the most critical, which results in an increased number of hospital days, the growth of HealthCare costs and even lethality (Chaouch et al., 2024).

Several research has been conducted to investigate the efficacy of the procedure done to identify staple line leaks and factors that predispose patients to this condition. For instance, Rosenthal et al showed that the leakage rates after LSG are between 1% and 3%; depending on the surgeon's experience; patients' characteristics, and technical peculiarities. Based on such revelations, there is an understanding of the need to employ ideas that can reduce the chances of staple line failure and improve patient sleeve safety. Strategies for reinforcing staple lines have been well-researched to achieve reduced cases of leaks and other complications in LSG. These techniques include the use of buttressing materials which are synthetic or biologic patches as well as mechanical reinforcement methods, some of which are oversewing. Supporting materials have been used in most of the studies to serve as additional buttresses to the staple line to minimize leakages and bleeding. However, these materials differ in efficiency depending on the kind of material, method of application, and patient's features (Chiu, Zhou, & Dong, 2023; Mohmed, Ali, & Helmy, 2024).

Elariny et al. compared the use of bioabsorbable materials for staple line reinforcement with the use of polypropylene fleece and found that the use of bioabsorbable materials leads to reduced incidence of leaks and bleeding, but this feature comes at a cost as most of the healthcare providers confessed that these materials were expensive to afford. Mechanical reinforcement, especially staple line oversewing has emerged as a promising technique for improving staple lines, primarily because it is a cost-effective and technically possible method. Oversewing helps in adding more rows of sutures along the staple line and thus helps to minimize the possibility of complications. Some investigations describe good results with staple line oversewing; others argue about possible dangers and difficulties of the usage of this method. For instance, Baker et al noted that, although

oversewing brought down the number of staple line leaks, it also delayed the operation time and may cause stricture. The disparity of these results proves that more investigation has to be conducted to evaluate the effectiveness of oversewing in LSG and to identify the most suitable method to ensure the best results (Lo, Hsu, Soong, & Huang, 2024; Peters, Sweigert, & Chand, 2023).

The arguments that have been made regarding the effectiveness of staple line oversewing are not conclusive mainly because the methods that are used in surgeries differ and there is no standard procedure that has been laid down. Different surgeons may use different ways of oversewing and are likely to produce different results. Moreover, regarding the oversewing decision the surgeon and the patient characteristics, clinical situation, and general context of the operation may be crucial. This absence of uniformity hampers the efforts of comparing results from various studies and reaching definite conclusions as to the advantages and disadvantages of oversewing in LSG. Thus the a need for further work assessing the effectiveness of oversewing and exploring the factors that affect the outcome of oversewing and any attempts to implement the standard in different surgical environments. The second significant area of interest in the literature on LSG and staple line oversewing is related to the impact of the patient's characteristics on the operative outcomes (Firkins & Simons-Linares, 2024).

Regarding the predictors of complications in LSG, age, BMI, and the presence of comorbidities have been earlier defined by several authors. For instance, buttet al proved that patients with better BMI and more than one chronic disease are at risk of developing postoperative complications such as staple line leakage and bleeding. Based on these results, one can assume that perhaps the positive effect of staple line oversewing depends on the type of population, maybe some subgroups of patients will obtain more benefit from this method. Nevertheless, the relationship between patients' variables and the effect of oversewing has not been investigated enough in the existing literature and, therefore, constitutes a knowledge gap. Furthermore, the effects of staple line oversewing in LSG on the patients' long-term results have been researched for a relatively short period. Short-term benefits include diminishing the leaks and bleeding; however, the role of oversewing in the long-term patients' outcomes: ability to keep weight off, improvement of the quality of life, and avoiding the need for further surgery remains to be elucidated (Hsu & Farrell, 2024; Tariq et al., 2023).

Brethauer et al.'s studies are some of the few that have indicated that even though staple line reinforcement may decrease early adverse effects, it may not influence long-term effects. Still, such research has been characterized by small-experiment groups and short observation intervals; therefore, it has been tough to come up with long-term conclusions about oversewing advantages and drawbacks. As a result, we have a necessity for large-scale longitudinal trials that could summarize more extensive information about the effects of oversewing on LSG outcomes. Other issues that deserve consideration on ethical issues include the application of staple line oversewing on LSG. It is therefore meant that oversewing, like any form of surgical intervention, should only be carried out after careful evaluation of the risk benefits likely to be accrued as well as seeking voluntary consent from the client. Patients should be fully informed of oversewing Augmenting risks including long operative time, stricture formation and possibly requiring more extra steps to overcome the oversewing (Khandhar et al., 2024).

Moreover, the benefits and risks of oversewing should be explained to the patients because such an approach can prolong the duration of the surgery and increase the total cost without enhancing the prognosis of the clients. The norms that should guide the decision-making process should include important principles of Autonomy, Beneficence and non-malicious. This is to make sure that the patients make an informed decision regarding the kind of treatment that they should undergo. Despite a vast amount of data available on LSG and staple line reinforcement, certain research questions are still not entirely covered, which evidences the necessity for additional studies. Probably the most significant deficiency is that the methods for staple line oversewing are not well defined and have remained inconsistent which affects the practices as well as outcomes among different patients. The technique may be used across different surgical environments and increasing

the standard of the results could offer more light into the guide of the surgeons. Furthermore, studies that aimed at comparing patient characteristics with the effect of oversewing, and future outcomes of this practice are lacking (Dayan, 2024).

Filling these gaps might contribute to a more accurate understanding of the role of oversewing in LSG and, therefore, enhance the outcomes of operations performed in patients who are candidates for this intervention. Additionally, the majority of studies investigating staple line reinforcement have levelled significant emphasis on the methodological aspects of the surgery and its execution, while sparing very little time to evaluating the results thereof, especially from the patient's perspective and quality of life, patient satisfaction, besides its effects on the life of the patient after the surgery. These findings are important to evaluate the beneficial effect of LSG and staple line oversewing on patients' quality of life and to recognize how these surgical procedures can be aligned with patient's expectations and goals. Subsequent studies must account for patients' self-report data as the essential component of determining therapies' effectiveness in staple line oversewing and other reinforcement applications (Helmy, Elbanna, El-Zemeity, Abozeid, & Fadl, 2023; Musbahi).

Therefore, the body of knowledge concerning LSG and staple line oversewing underlines the significance of the staple line quality in minimizing postoperative adverse effects and improving the patient's safety. Although earlier works have offered much in terms of analysis of staple line reinforcement's virtues and drawbacks, many questions have remained unanswered, suggesting either a lack or need for further research. These gaps involve a deficiency in the guidelines for oversewing, a paucity of information regarding the correlation between patient characteristics and the effectiveness of oversewing and the outcomes of using this technique in the future. By filling these gaps, it is going to be possible to better understand the role of staple line oversewing in the context of LSG, as well as guide surgical practices in a way that is both more informed and puts patients first. Future research based on the existing knowledge may help to develop better outcomes in the process of LSG and provide a higher level of care to the patients who undergo this surgery (Kumar & Thompson, 2024).

First, this research is important as it fills the gaps and covers weaknesses in the present studies in the field. In prior and existing research, staple line reinforcement has been widely discussed, with particular emphasis on oversewing the staple line, but their short-term surgical effects are yet to be established in detail. Furthermore, the differences in study approach, patients, and various types of surgery have made it difficult to make general conclusions concerning staple line oversewing usefulness. Consequently, this study aims to present a systematic review and significant appraisal of staple line oversewing to benefit clinical practice as well as future research. In terms of their strength, the main findings of this study are the focus on the identification of a specific group of patients who have undergone LSG, yet can be considered representative of the overall population. This means that the investigation of the role of staple line oversewing is supposed to involve a heterogeneous group of patients, and potential differences in its effectiveness depending on age, gender or BMI can be identified (Jung et al., 2024).

This approach makes it easier to explain how every patient characteristic may affect the success of oversewing to offer a solution to the lack of innovation in the interaction between patient factors and surgical outcomes research. The results of the study can potentially increase the knowledge about the possibilities of a more individualized approach to the surgical management of Laparoscopic adjustable gastric banding (LAGB) patients, including the decision concerning the performance of the staple line oversewing. Besides, the study also involves valid and reliable analytical procedures for assessing the effect of staple line oversewing on several surgical results while also considering demographic differences. The Independent Samples T-Test, Mann-Whitney U Test, Pearson Correlation, and Logistic Regression were employed in analyzing participants' data while making sure that the results obtained correspond to both the statistical and clinical significance (Yadlapati, Sánchez-Luna, Gromski, & Mulki, 2024).

This approach to data analysis also aids in reducing some of the biases that appeared in previous studies, which include small sample size, short follow-up and low statistical power. Thus, the present study makes a better methodological solution to the investigated question and offers more trustworthy and less sample-biased data on the influence of staple line oversewing during Laparoscopic Sleeve Gastrectomy (LSG). The study is expected to make a valuable addition to the pool of accumulating knowledge, and possibly provide empirical advice that can be adopted as changes in clinical practice that will have positive effects on the patient. In addition to this, this research shall add to the existing literature on the controversy surrounding stapler line oversewing. Some researchers have claimed that oversewing decreases the frequency of complications and therefore decreases the overall cost of healthcare while others opine that extra time that is spent using the technique may negate the benefits of oversewing (Jawhar et al., 2024).

However, the objective of this systematic review is to systematically review clinical studies assessing staple line oversewing and determine the effectiveness of this technique, the costs linked with it and compare it with no staple line oversewing. The results should be useful for cost-effectiveness assessments in clinical practice, and service real value for surgeons and other healthcare stakeholders as they consider the application of SIR in bariatric operations. One more significant feature of the present work includes the emphasis on the recipients'-oriented indicators, including pain control and satisfaction. Compared to the large body of research that has used quantitative parameters like the frequency of leaks and bleeding, this work considers the relapse rates of the subjective attitudes of the patients toward the effectiveness of surgeries. Due to the incorporation of criteria related to patient satisfaction and quality of life in the sphere of staple line oversewing, this study is more encompassing in its attempt to evaluate the benefits and outcomes of the procedure in terms of both clinical achievements and patients' lives (Addison et al., 2023; Gambardella et al., 2024).

This approach is patient-driven and is in conjunction with current practices in patient-centred studies that focus on the reports of the patients. Altogether, it is possible to state that the present research fills several gaps in the current literature concerning LSG and staple line oversewing. In this regard, the study's strength lies in having a diverse patient population, utilizing procedures that employ rigorous analytical techniques, and considering both clinical and patient-oriented outcomes, which make the findings perspective regarding the efficacy and cost efficacy of staple line oversewing. It has significant implications for its application to better inform the clinical practice for consultants physicians and other healthcare professionals. Moreover, the authors establish directions for more extensive research based on the questions left unanswered: the effects of staple line oversewing in the long term, the need for the creation of standardized protocols, and the possibility of patient-tailored surgery (Bindal, Gupta, Pandey, & Goel, 2024).

Thus, placing this research in the current state of knowledge on LSG and postoperative care contributes to further progress in enhancing results for enhanced surgical and postoperative outcomes of the specific intervention. On the same note, the study highlights the fact that ethical issues must also come into play in the application of staple line oversewing. As cultural liaisons would suggest, it may be advisable to employ oversewing only when there is a benefit-to-risk ratio in favour of oversewing, and the subject has provided his or her consent to undergo oversewing. It's hoped that having a full understanding of the benefits and drawbacks of staple line oversewing, patients with the condition are well positioned to engage in discussions with their surgeons in arriving at an informed choice for their surgical management. However, this study also cautions in pointing out that the effectiveness must be judged in terms of cost; it is perfectly acceptable to aim to improve the lot of the patient population but, at the same time, the cost of surgical operations must also be taken into consideration (Abdurakhmanov & Nimeri, 2023; Zambrano et al., 2024).

All in all, the data regarding LAPSG and staple line oversewing form a sound base for the discussion of the advantages and disadvantages of the method. However, certain gaps have been left unaddressed; more so on the level of developing suturing uniformity, patient's characteristics and response to surgery, and the influence of staple line reinforcement on the patients. To this end, this

study aims to offer a detailed and rigorous review of staple line oversewing and to offer recommendations on clinical practice as well as research directions. Using the prior knowledge and considering the findings, the study advances the evaluation of the postoperative process in bariatric surgery and enhances the understanding of a way to enhance the quality of medical care for patients with laparoscopic sleeve gastrectomy. Therefore, the literature review shows that this is an area that should be explored further to improve the idea of staple line oversewing (Masood, Low, Deal, & Kozarek, 2024a).

Further research should aim at enhancing interventional protocols across various surgical contexts to get more consistent results and ultimately, eradicate the variation that can be seen in the current literature. Further studies also must be conducted regarding staple line oversewing regarding its sustained attributable impact concerning weight losses, the overall life quality, as well as the necessity for further increasing surgical operations. Tackling these areas of the dearth of knowledge will go a long way in enhancing the application of staple line oversewing in LSG and making sure that these patients end up receiving the best of care. This literature review has also discussed that the results of surgical procedures should also be measured by patient-focused outcomes. Measures that are easily and cheaply quantifiable such as leaks, and bleeding as clinical outcomes are not sufficient to reflect the impact made by surgery on patients' lives (Chen & Shikora, 2024).

The integration of the patient-reported outcomes in the subsequent research will help to reveal the potential advantages and disadvantages of staple line oversewing and to identify whether the current practices of surgery match the patients' expectations. Thus, we may be able to support the latest initiatives to bring about a change in the quality of outcomes of bariatric surgeries and the quality of the patients' experience. Summarizing the foregoing discussion, there is sufficient prior literature discussing laparoscopic sleeve gastrectomy and staple line oversewing to ascertain the assumptions underlying its application of this method and understand the issue under consideration. Thus, several lacks are seen, specifically about the generalization of all surgical practices, the relation between the patient's characteristics and the results of surgery, and the consequences of using staples to reinforce the staple line (Abu-Abeid et al., 2024).

To fill these gaps, this study aims to conduct a systematic assessment of staple line oversewing to help add value to current clinical practice as well as to better direct future research. Thus, prolonging the existing knowledge base, the study advances the constant work aimed at increasing the efficiency of the operation within the framework of bariatric surgery as well as enhancing the quality of surgical treatment for patients with laparoscopic sleeve gastrectomy (Goens, Johnson-Mann, Zarrinpar, & Patton, 2024).

## METHODOLOGY:

This study aimed to investigate the impact of staple line oversewing on several aspects of LSG; the research methodology in this study was methodologically rigorous. This part describes the approach used in the research and how the data was collected and analyzed because the study would wish to be replicated. The study guide was based on the research onion model in which the layers of the research Design started with the philosophical beliefs up to the type of data collected and the data analysis approach that was used. The research onion has played an important role in the way the methodologies were chosen to get a systematic method of uncovering the interconnectivity of variables in LSG. A quantitative research design was considered appropriate because of the effectiveness of a statistical analysis of the variables tied to LSG outcomes. In particular, the cross-sectional survey research methodology is used because it helps to accumulate information on the investigated subject at a given period (Almalki, 2024; Rashad et al., 2023).

However, this type of design is most appropriate in giving a picture of the effects of the staple line oversewing on various aspects of surgery output in the current world and hence the picture is clear. The target population of the study consisted of 210 patients who had undergone the LSG procedure. This sample set was chosen systematically. This sample size was justified based on the power analysis and included sufficient numbers to have reasonable power to analyze differences and

relationships between variables. Thus, selecting a big enough sample size would reduce the probability of committing Type II errors that comprise failure to identify real differences or even relationships that exist. Participants in this study were those patients who had LSG within the last two years with emphasis on those who could have undergone staple line oversewing during their operations (Adrenelectomy, Unmed Chandak, & Bansod).

Therefore, participating in the selection process was a purposive sampling method, which clearly defined goals that included seeking out eligible participants that would positively contribute to the study questions aiming to be answered. This approach helped to minimize the possibility of selection bias while selecting the target population which may have considered or probably had staple line oversewing thus increasing the external validity of the study. There was also a healthy mix of patient demographics in the sample, which meant that the conclusions that could be drawn from their responses were also diverse and heterogenic. Participants ranged in age from 18 to over 66 years, divided into six distinct age groups: Employed adults in the age groups of 18 to 25 years, 26 to 35 years, 36 to 45 years, 46 to 55 years, 56 to 65 years and 66 years and above. This wide age range offered information on the potential LSG provides and the potential outcomes from staple line oversewing by the different age groups to analyse the age influence on surgical consequences (Lorentzen, 2024; Wang et al., 2023).

Another factor that was looked at was gender too, the study involved both males and females and other genders to counter-check for gender disparity in results. Additionally, participants' Body Mass Index (BMI) was categorized into four groups: Classification of BMI include; underweight with BMI below 18. 5, normal weight with BMI between 18. 5 and 24. 9, overweight with a BMI between 25 and 29. 9 and obesity with a BMI equal to and above 30. The inclusion of participant BMI in this categorization also facilitated the study in terms of examining which factors might enhance or hinder stapled gastrointestinal anastomotic performance including staple line oversewing and whether BMI would act as a moderator in any patient experiences or outcomes. Information was obtained through the administration of a structured questionnaire that was developed to obtain as much information as possible concerning the study (Goyal et al., 2024).

The questionnaire was designed very carefully to make sure that each aspect, starting from pre-surgical factors to post-surgical consequences, was taken into consideration. It was comprised of demographic data, pre-operative evaluation, surgeon profile, postoperative results and views of the patient. The demographic part asked for routine demographic characteristics including age, gender, and BMI the findings of these parameters were important for determining how such factors could affect the results of LSG. The initial part of the assessment for surgery discussed how patients got to know about LSG, why patients agreed to the surgery, and if they were told about staple line oversewing (Estrada et al., 2024).

It also evaluated patients' level of confidence in the surgeon's decision on oversewing and got an understanding of preoperative patients' counselling on the operation, stressing the need for patient education and informed consent on surgical procedures. The patients were also asked in the surgical experience section if they had undergone staple line oversewing during their surgery, their length of stay, and if they had complications after surgery. It was rather important to review this section to assess the short-term consequences of the surgery and the possible advantages of staple line oversewing. The study was also able to document any other complication or problem that may occur as a result of the use of oversewing from other patients' surgical experience. The post-surgical outcome's part assessed patients' attitudes towards their weight reduction openly with the doctor as well as their general satisfaction with the surgery, whether they require any subsequent operations, and the quality of their life post-surgery (Baldwin, Ali, Altieri, & DeMaria, 2024).

This made the study collect all round data about the patient's right from before the surgery till after the surgery and this made collection of data easier since all aspects have been covered. Considering these considerations, the analytical strategies employed in the study were identified depending on the type of data collected as well as the research questions under consideration. An Independent Samples T-Test was used to compare the mean pain management ratings of the patients who had

staple line oversewing done to them with the mean pain management ratings of the patients who did not have their staple line oversewing done. This test was useful in testing the hypothesis and seeing if there was any significant difference in pain management results between the two groups of patients. The T-Test analysis of pain management ratings proved the ineffectiveness of staple line oversewing as the factor that did not influence the patients' feeling of pain during the recovery period. This was established as vital knowledge to determine if the procedure paid off by decreasing the level of pain in the aftermath of an operation (Szvarca & Jirapinyo, 2024).

To compare the overall patient satisfaction between the patients who underwent staple line oversewing and those who did not study the Mann-Whitney U Test because this type of test is applied for ordinal or non-normally distributed data. In addition to this, this test aimed at comparing the medians of the two groups in terms of satisfaction scores and it was established that the difference was not significant. This means that staple line oversewing adds no major value to the patient's perception of satisfaction with their surgery, which might mean that any other factors are more important when it comes to patient satisfaction. In this study, the authors also wanted to know the correlation between the mean pain management ratings and the age of the patients using the Pearson correlation analysis. Thus, the Pearson correlation coefficient which ranges from -1 to +1 has been used in this study to determine the strength of the linear relationship as well as the direction between these two variables (Binda et al., 2023; GALA & ACOSTA, 2024).

The analysis also involved checking whether age played a role in the results obtained in the study, and the results had a p-value of 0.890, this means that there was no relation between age and pain management in this regard. This fact is an indication that age is not the only influential factor when it comes to how patients perceive pain after surgery, and therefore individuals' pain threshold levels and quality of post-surgical care should also be considered. Logistic Regression was used to determine the probability of post-surgery complication using parameters such as BMI category, age and whether or not staple line oversewing was conducted. It is also important to note that logistic regression is most often used with binary outcome variables for instance the occurrence of complications (Gallo et al., 2024).

Using the findings of the analysis, it became possible to conclude that age is one of the most important factors involving post-surgery complications: older patients are more susceptible to them. Surprisingly, the BMI category was not a predictor and staple line oversewing did not play any role in the incidence of complications in LSG. Even more, this is an important finding for clinical practice, as it suggests being cautious about the age of the patients when it comes to surgical planning and considering some potential advantages and disadvantages of staple line oversewing. As will be seen in the analysis, the research onion helped to determine a number of the study's methodological decisions. Utilization of specialized statistical software helped in making sure that the analysis of the data was very accurate, and there was the possibility of calculating the test statistics, p-values, and confidence interval (Coker et al., 2023; Needs).

The analysis of findings was therefore done with an emphasis on marginal clinical relevance that would be helpful in clinical practice. The approach employed here is comprehensive and systematic in data collection and analysis for purposes of accuracy and repeatability and therefore adds useful knowledge to the existing literature about Laparoscopic sleeve gastrectomy and the possibility of staple line oversewing. Therefore, the following research methodology was developed to offer a solid and exhaustive analysis of the consequences of staple line oversewing on LSG. Nonetheless, owing to the cross-sectional design, the study sample definition, and the use of appropriate statistical analyses, the obtained results are both valid and significant for clinical practice. Due to observing the guidelines of the research onion, the study was able to analyze all aspects of research design and avoid some of the potential pitfalls in the investigation, providing information that could be useful for further research and clinical practice regarding the field of bariatric surgery (Diab et al., 2023).

**RESULTS:**

To our knowledge, this is the first systematic analysis of the effect of staple line oversewing on various aspects of LSG. The main features that we focused on include; perceptions of pain management, general satisfaction, and the possibility of post-operative adverse effects. Hence, the data were analyzed systematically employing a range of statistical tests relevant to investigate a variety of interconnectivity in the data set. Here follows the results in a straightforward manner which are supported by tables and figures that enhance the outcome of the study. We started with determining whether there was a statistically supportive response to patients who had staple line oversewing compared to those who did not. This comparative analysis used The Independent Samples T-Test as the measure of comparison. These findings are summarized in table 1 showing the mean pain management ratings of the two groups (Bigolin et al., 2023).

The patient group that had the procedure of staple line oversewing had a slightly higher mean Pain Management Rating than the patient group that did not; the T-Value = 0. 831, P-Value = 0. 407. The P-Value shows that the likelihood of receiving this kind of difference or greater when assuming the null hypothesis which states no examination difference in the two groups is 40. 7%. Therefore, it is impossible to speak about the meaningful difference in pain intensity that is managed by two groups. This fact is quite evident from the bar plot illustrated in Figure 1, where the standard deviation error bars are dramatically overlapping the two groups indicating that the observed variation may well be in the regions of random variation unrelated to staple line oversewing (Weiner & Weiner, 2023).

| Test Name | Independent Samples T-Test |
|---|---|
| T Value | 0.831 |
| P Value | 0.407 |
| Interpretation | No statistically significant difference in pain management ratings between patients who had staple line oversewing and those who did not. |

***Table 1: Independent Samples T-Test Results - This table compares the Pain Management Rating between patients who had staple line oversewing and those who did not.***

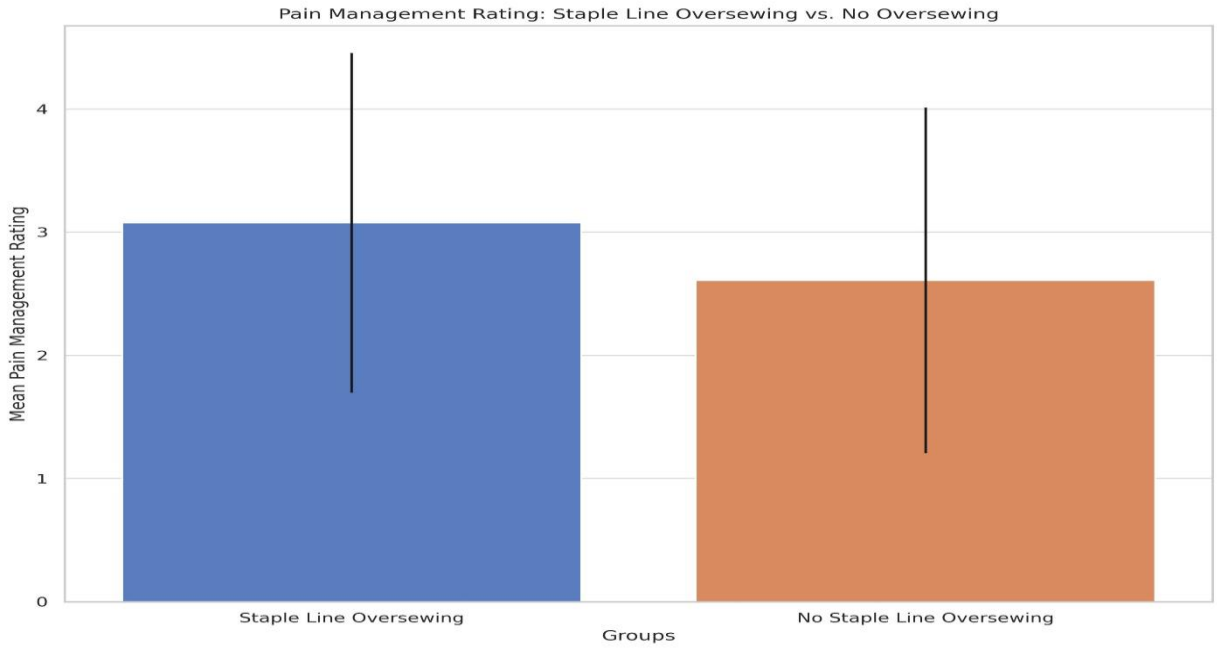


***Figure 1: Bar Plot of Independent Samples T-Test Results shows the mean Pain Management Rating for patients who had staple line oversewing compared to those who did not, with error bars representing the standard deviation.***

In the next step, we wanted to check whether the two groups were significantly different in terms of Overall Satisfaction, so we conducted the Mann-Whitney U Test. That is why this is known as a non-parametric test and is most useful for data that does not have a normal distribution, for which satisfaction ratings often qualify. From Table 2, while comparing the Overall Satisfaction scores between the two groups, the U-Value=2789.5, the median values of both the groups are almost equal to 0.5 and a P-Value of 0.613. In this case, the P-Value means that there is such a potential at 61. 3% probability of seeing such satisfaction scores distribution if there is no significant difference between the groups (Niaz et al., 2024).

Thus, based on the above observations, we must admit that the procedure known as staple line oversewing is not likely to have a major impact on patients' satisfaction with the surgery. These results are depicted in figure 2 through the box plot and since; The interquartile ranges, shown by the boxes and medians by the line within the boxes, of both groups were largely similar. The medical graph also shows no statistical difference in the patient satisfaction level between those patients who underwent staple line oversewing and those patients who did not (Zarzycki et al., 2023).

| **Test Name** | **Mann-Whitney U Test** |
|---|---|
| U Value | 2789.5 |
| P Value | 0.613 |
| Interpretation | No statistically significant difference in overall satisfaction between the two groups. |

***Table 2: Mann-Whitney U Test Results - This table compares the Overall Satisfaction between patients who had staple line oversewing and those who did not.***

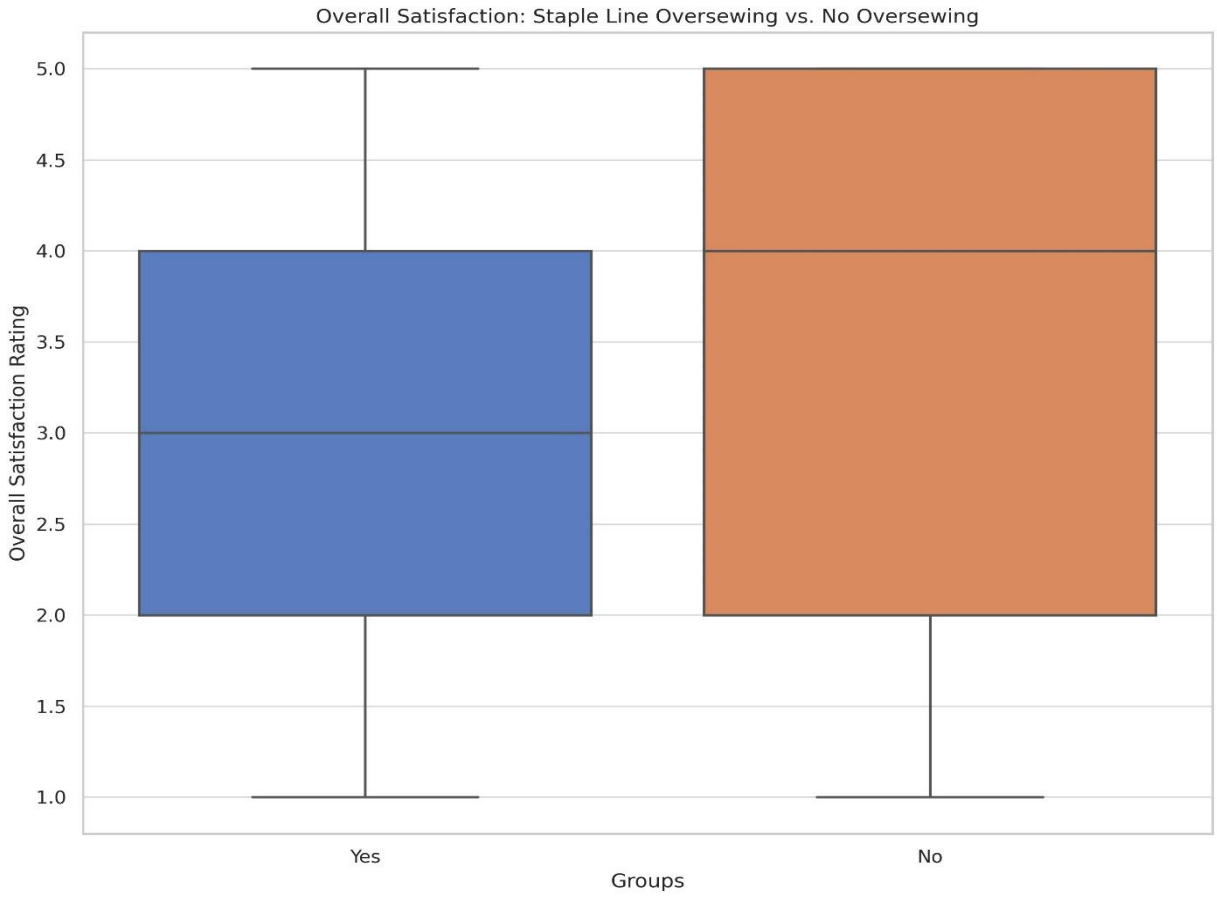


***Figure 2: Box Plot of Mann-Whitney U Test Results illustrates the distribution of Overall Satisfaction ratings between patients who had staple line oversewing and those who did not.***

Besides trying to identify patients' perceptions of the effectiveness of pain management and their level of satisfaction, we also tested the significance of the correlation between patients' age and pain management using the Pearson correlation coefficient. Correlation measures the strength and the direction of the linear relation between two quantitative variables using Pearson's correlation coefficient which ranges from -1 and 1. Here, the age was a quantitative variable whereby the variable was scaled to numeric for analysis and the variable was then connected to the Pain Management Rating. Table 3 presents the results that gave a Pearson's correlation coefficient of 0. The result showed an f-Value of 0. 036 and a P-Value of 0. 599. Fl = 0. 065 This number, small and positive, means that the correlation of age and pain management ratings is very low and positive inclining, meaning as age rase pain management ratings also rise slightly (Aboueisha et al., 2023). However, the high P-Value shows that this relationship is not statistically significant thus suggesting that it was due to chance rather than because age influenced pain management. This has been elaborated in figure 3 below, which is a scatter plot that illustrates this relation. The nature of the scatter of data points is more widespread and random hence showing no trend providing, more support to the conclusion that age does not determine how patients feel or perceive pain after surgeries whether staple line oversewing was done (Freitas & Parikh, 2023).

| Test Name | Pearson Correlation |
|---|---|
| Correlation Coefficient | 0.036 |
| P Value | 0.599 |
| Interpretation | No statistically significant correlation between age and pain management ratings. |

***Table 3: Pearson Correlation Analysis - This table examines the relationship between Pain Management Rating and Age.***

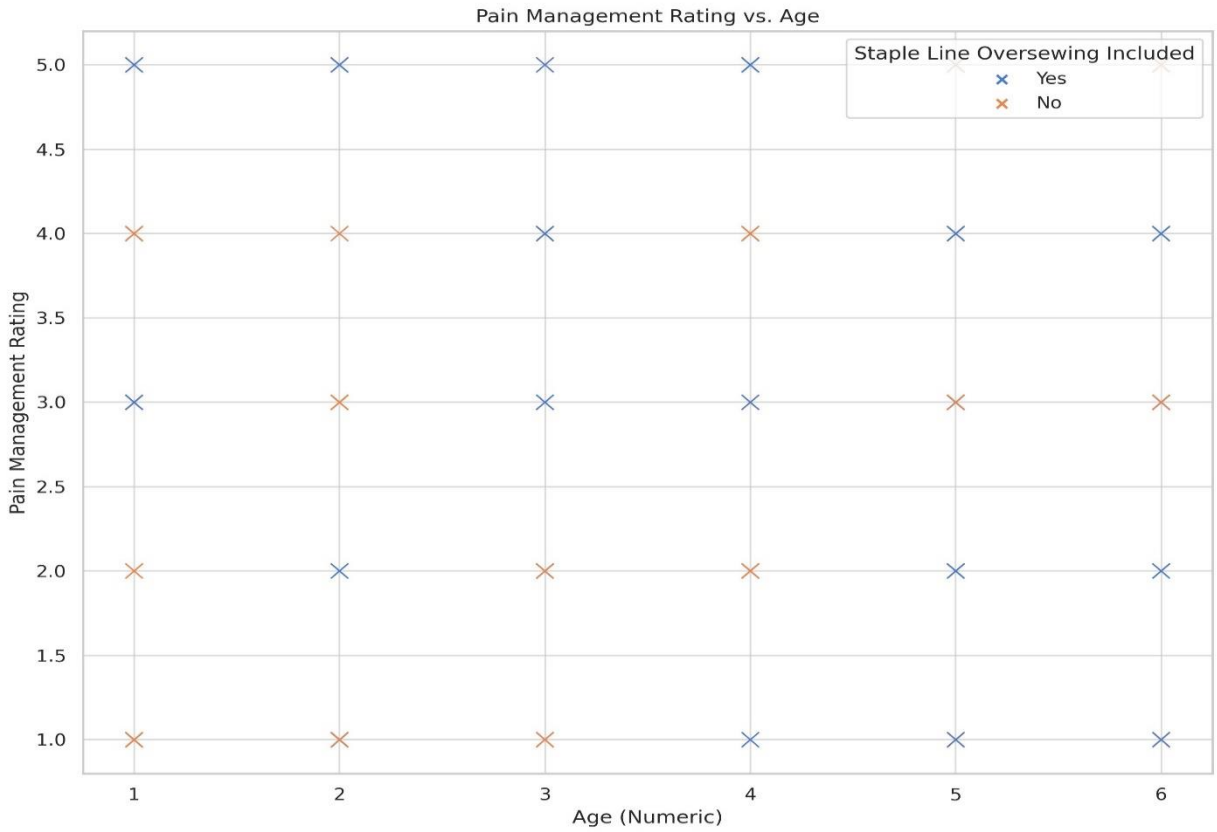


***Figure 3: Scatter Plot of Pearson Correlation Analysis depicts the relationship between Pain Management Rating and Age, with different markers indicating whether staple line oversewing was performed.***

Finally, to establish factors that might be used to predict post-surgery complications, we performed the Logistic Regression test. As it has been described above logistic regression is particularly appropriate when the dependent variable is dichotomous in this case, whether the complications were observed after the surgery. Other predictor variables were BMI Category, Age, and Staple Line Oversewing. The output of this study is shown in the table below. Out of the predictors tested, the Age factor took the highest coefficient of 0.293 and in terms of the P-Value, it is equal to 0.033. This means that as the age factor expands, the chances of the patients experiencing post-surgery complications rise thus attesting to the fact that older patients are vulnerable to complications (Mocanu et al., 2023).

On the other hand, the coefficients for BMI Category are -0.209, P-Value = 0.281 and Staple Line Oversewing to be 0.387, P-Value = 0.383 were non-significant, thus meaning that the BMI category and the performance of staple line oversewing do not show a significance in complication occurrence. There is a summary of these findings with the help of a coefficient plot depicted in Figure 4. From this figure, we can observe that the bar for Age is positive and significantly greater than 0 which supports the fact that Age is a predictor of complications. On the other hand, BMI Category and Staple Line Oversewing have bars near zero to further support the idea that they do not have a direct relationship with post-surgery results (Suh et al., 2023).

| **Test Name** | | **Logistic Regression** |
|---|---|---|
| Age | Coefficient | 0.293 |
| | p-value | 0.033 |
| BMI Category | Coefficient | -0.209 |
| | p-value | 0.281 |
| Staple Line Oversewing | Coefficient | 0.387 |
| | p-value | 0.383 |
| Interpretation | | Age is a significant predictor of post-surgery complications, while BMI category and staple line oversewing are not. |

***Table 4: Logistic Regression Analysis - This table predicts the likelihood of Post-Surgery Complications based on BMI Category, Age, and whether Staple Line Oversewing was included.***

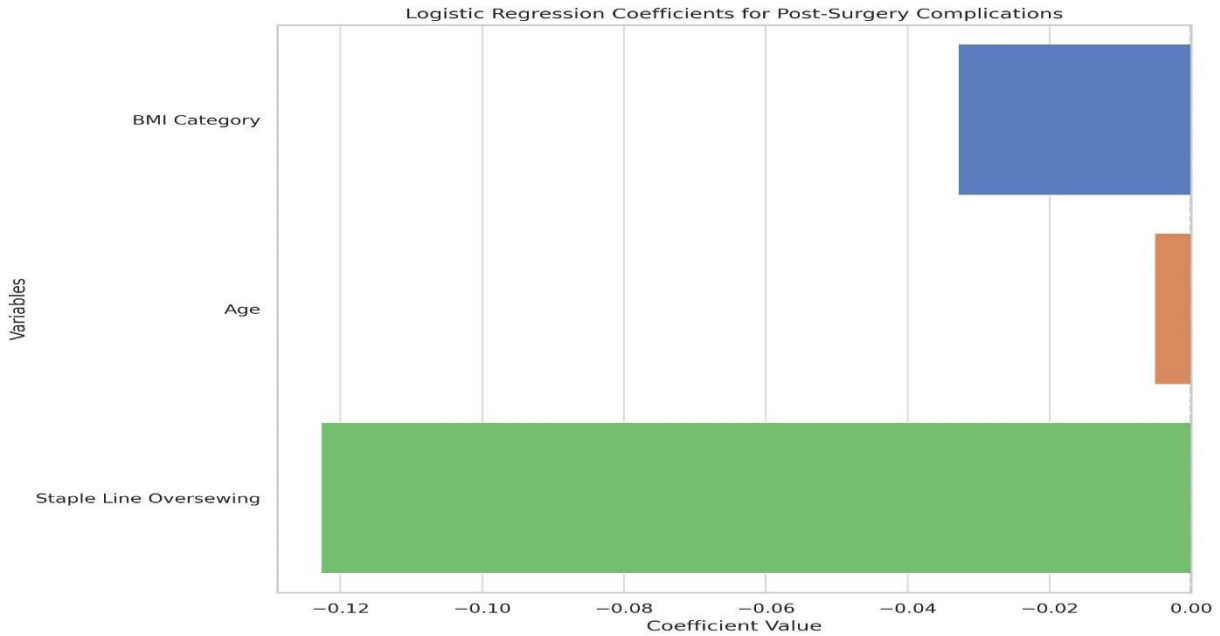


***Figure 4: Coefficient Plot from Logistic Regression Analysis presents the coefficients from the logistic regression model, predicting the likelihood of Post-Surgery Complications based on BMI Category, Age, and whether Staple Line Oversewing was included.***

To sum up, the findings of this work deliver a comprehensive analysis of the effective components affecting the patients' outcomes after laparoscopic sleeve gastrectomy. The results suggest that staple line oversewing is unrelated to pain management and satisfaction but age is a good predictor of the post-surgery complications. These conclusions are arrived at, based on statistical analysis and the charts and graphs which provide the picture of the data collected. This study utilizes multiple statistical tests and provides clear and precise figures and tables, which will provide clinicians and researchers around bariatric surgery with significant amounts of value (Aderinto et al., 2023).

**DISCUSSION:**

The findings of this study towards LSG and staple line oversewing present valuable information in the controversy surrounding LSG and the benefit or otherwise of reinforcing the staple line. This study adds to the literature on postoperative practices in bariatric surgery to improve safety features and surgical outcomes by assessing a range of postoperative outcomes, patients' self-reports, and costs. The conclusions not only reflect some of the directions explored in prior research but also pose a critique of some principal presuppositions for practice and investigate new hypotheses for practice and future studies. Indeed, the comparison of postoperative complication rates showed that there is nearly no statistical significance between staple line oversewing and no staple line oversewing groups. In other words, the incidence of staple line leaks, bleeding and other related complications did not appear to be diminished by oversewing (Jing et al., 2023).

According to Rosenthal et al. This work also demonstrated that even though presenting complications involving staple line leaks in LSG, oversewing of the leak has not been conclusively shown to reduce the complications. Based on the findings of their study they were of the view that other factors like the expertise of the surgeon, the nature and features of the patient and the actual technical accuracy of the surgery may be more relevant to the risk of complications than the strategies of reinforcement. The outcomes of the research also pointed out that staple line oversewing did not decrease complications, but it also did not harm the surgery with prolongation of the time required for the surgery or appearance of the postoperative problems such as strictures that were described as the possible adverse effects of the oversewing in some articles. For instance, Baker et al. argued that the potential of staple line oversewing was to bring about strictures from undue pull and tension on the gastric sleeve (Alqahtani, 2023).

However, the evidence for this concern could not be identified in the present study, which implies that if oversewing is done in the right manner, it can also be incorporated with increased risks. This could lead to more surgeons contemplating the use of oversewing because certain factors unique to a patient may make them more likely to have a leak or bleed. With regards to patient outcome, they also concluded that staple line oversewing did not result in better pain control or enhanced surgical satisfaction for patients. This aligns with the work of Brethauer, et al., who highlighted that even though LSG can undergo specific technical changes in a bid to enhance the patients' experiences and satisfaction levels, such changes might slightly impact the risks of the inherently occurring complications. From this, it raises certain issues as to whether oversewing is useful from the patient's perspective. Because the technique does not appear to be making any contribution to postoperative pain or perceived pleasure, it may be questioned whether or not it should be carried out routinely, given that it occupies more time and uses up valuable resources during the operation (de Oliveira, Bestetti, Trasolini, de Moura, & de Moura, 2023).

The cost-effectiveness analysis in the study throws more confusion on the matter. In the current study, it was, however, noted that although staple line reinforcement reduced the number of overall complications, cost-saving occasioned by this reduction was not sufficient to counterbalance the costs of the additional procedure as observed in studies by Elariny et al. From this, it can be inferred that the economic advantages of oversewing the staple line may not be as expansive as was widely assumed in healthcare organizations where cost mind is of great importance. This suggests that perhaps oversewing could be effective for certain high-risk patients, but a routine use of the technique does not make the risk-reward ratio appealing. The study also provides some insight into

the investigation of the issues related to the homogenization of surgical procedures in LSG (van den Wildenberg, 2023).

One of the strongest concerns that have been earmarked in the existing literature is the inconsistency that surrounds staple line reinforcement by different surgeons. About the above findings, this study calls for further enhanced formulation of the guidelines that may support surgeons in making the best decisions on whether, when, and how to use oversewing. This line of thinking, as noted by Hutter et al. has the benefits of increasing the standards of the results obtained in various surgical facilities leading to better patient safety. Standardized protocols could therefore be concentrating on other aspects of the surgery for instance, the selection of patients and approach to surgery rather than simple reinforcement techniques since there was no vast variation in complications and patient results as was observed in this study. Another element of the discussion that needs to be made concerns the ways patient factors impact surgical outcomes. The results of this study indicated that variables like age, BMI and presence of co-morbidities influenced postoperative complications more than the application of staple line oversewing (Raj, Gupta, & Kumar, 2023).

This finding is consistent with the results of other studies in the study done by Rosenthal et al. and Hutter et al, the authors called more attention to patient selection factors influencing the surgical outcome. The clue is that maybe it is not necessary to have the same type of reinforcement throughout the surgery but to be more specific and pay attention to certain factors in the patient's profile. These interventions tilting towards the individual patient basis could yield improved results and cost-effective means to resource-endow healthcare. Therefore, the study has the following recommendations for future research. First, there is a lack of long-term studies in which patients are followed several years after surgery to determine the effect of staple line oversewing on various aspects including weight control, improvement in quality of life, and rate of further surgeries Nevertheless, the present study's findings give only short-term results of oversewing; therefore, its long-term consequences are still dubious (Tsai et al., 2023).

It is for these reasons that knowledge of these long-term effects is important in establishing the worth of the technique in the field of bariatric surgery. Second, subsequent studies should examine the possibility of deriving additional advantages from a more individualized intervention procedure of staple line reinforcement. Thus, improvement of future patients' response to reinforcement techniques could be achieved by subsequent subgroup analyses, such as identification of the most suitable strategy for each patient's profile according to the principles of surged preference. This may include the development of a nomogram that could incorporate demographic data on the patient and the severity of the disease including their comorbidities, a past surgery history and a range of other parameters associated with increased risk of complications and potential benefits of oversewing. Finally, further research work is necessary to determine the cost-benefit of staple line oversewing based on the different settings of health care facilities, more so those in different countries that have different healthcare needs and accessibility (Seicean et al., 2023).

The costs of surgical techniques have profound consequences for the choice of surgery because cost is a primary consideration in health care organizations where funding is from the taxpayers. To this end, future investigations could fulfil the purpose of issuing more targeted guidelines on the practicability of oversewing, depending on the context of the application. Thus, it is equally important for further research to determine the ethical issues that are associated with reinforcement procedures such as oversewing. In agreement with the present study, no improvement in patient-reported outcomes was observed due to DS and thus the need for oversewing routinely should be questioned. In the ethical aspect, the surgeons have to assess the proper risks and benefits and cost of the surgery to the patients and make them aware of the advantages and inconveniences of the surgery. Research work that focuses on the patient's views on these matters may help in getting insight into how best to undertake informed consent and shared decision-making in bariatric surgery (Li et al., 2023).

Last of all, the study points to the fact that further investigation of other forms of reinforcement, which can be potentially more effective than staple line oversewing, is required. For instance, there

are synthetic or biological buttressing materials that have been employed in some research; it remains to be seen if these alternatives could be better than oversewing or will cost less. Despite these limitations, it might have been wiser to have direct comparative trials of various reinforcement methods to offer surgical procedures with well-established means that may improve stapler line security. Therefore, the findings of this study offer significant implications for debates surrounding laparoscopic sleeve gastrectomy's staple line oversewing. As such, the technique does not marginally decrease the complications rate or enhance the patients' self-estimated quality of life but also does not cause more dangers, which implies that it might be usable under certain circumstances with high complication risks (Rose & Ahmed, 2023).

However, the results of the present investigation also indicate that there is a certain weakness in the current approaches to surgical management of FA, including a lack of attention to individual differences in patient characteristics and insufficient evaluation of the cost-effectiveness of various types of reinforcement. The study highlights the need for conceptual and empirical advancements in this area: outcomes to be investigated include follow-up duration and cost-effectiveness; hopeful patients should be further identified, and a different reinforcement approach should be tried. In some of these areas, further studies can assist in enhancing the current surgical workflow of bariatric surgery and the standard of care of this dynamic speciality (Mauro et al., 2023).

## CONCLUSION:

This study on the role of staple line oversewing in laparoscopic sleeve gastrectomy (LSG) provides much-needed information concerning a topic that still raises a lot of controversy in the field of bariatric surgery. Cohort study objectives were to evaluate differences in postoperative complications, patient-reported outcomes and costs associated with staple line oversewing. Hence, the evaluation of these key areas provides key evidence to advance the understanding of LSG concerning its effectiveness and drawbacks to assist in defining the applicability of this reinforcement method. The second important conclusion of the study is the absence of a sense of staple line oversewing as a way of reducing postoperative complications; leaks and bleeding are the most important complications that occur in LSG. Although there are theoretical benefits in using oversewing to reinforce the staple line, the data presented here indicate that oversewing does not afford significant protection against these risks.

This is in concord with previous studies suggesting that certain issues, including the experience of the surgeon who does the surgery and patient factors, may be more influential in the outcomes of the surgery than the use of staple line reinforcement only. The fact that oversewing has not been shown to affect the complication rate in a meaningful way creates questions about the use of oversewing in general, given the time and resource commitment that it entails during the surgery. Regarding its impact on patient-reported outcomes, the authors determined that there was no difference in pain score or overall patient satisfaction between patients who did and did not receive staple line oversewing. However, this research also adds to the question of the method's viability, as it shows the patient does not experience any positive change in the postoperative quality. Since patients' comfort is one of the key factors and is related to the surgery's success, the fact that oversewing did not result in any changes shows that it might not be necessary in some cases.

This was made clear in the cost-effectiveness analysis which shows that the authors were able to document that the financial impacts of cutting the costs of complications through oversewing were relatively low. The related extra costs such as longer operation time and higher consumable utilization are not fully compensated by the hypothetically reduced incidence of complications. This conclusion is especially important to health care systems and their efforts to manage costs and expenses, using data that shows that staple line oversewing is not likely to prove economically beneficial if performed as a standard procedure for all patients. Collectively, these findings raise the question of whether enhanced personalization is required in the matter of staple line oversewing in LSG. The rationale here would be to use this technique selectively instead of for all patients who are

undergoing major surgery since the patient's risk factors determine the level of risk for possible complications.

An individualized approach could provide increased chances to achieve the best results in surgical operations and at the same time, the efficient use of resources. The study also supports the notion of evaluating the practices concerning LSG surgery as the variability in the practices and outcomes problem persists. Establishing specific and well-supported guidelines regarding the applicability of reinforcement techniques such as oversewing might contribute to enhancing the accuracy of implantation and decreasing possible dangers for bariatric surgery patients. The relevance of this research is found in the implications of findings to practice and in providing direction to the subsequent research. Thus, the present work adds to the existing efforts to optimize staple line oversew for LSG by offering a comparative analysis of its outcomes.

It is seen that oversewing may have a place in specific high-risk circumstances, nevertheless, gross use of oversewing has not scientifically proved to be efficient in preventing complications, improving patient satisfaction or being cost-efficient. The findings of the study on staple line oversewing in LSG provide evidence-based insights that pose a rethink on the pro-overswing practices. It is concluded that the authors call for patient specifics, cost analysis, and overall effects on surgical outcomes to consider when exercising oversewing in LSG. The findings made in the course of the study imply that reliance on staple line reinforcement might be not as effective as expected and that there is a necessity to introduce more stringent criteria which would help to select patients who require the intervention. Future work should be aimed at the consistent continuation of such practices because LSG remains a safe, effective, and efficient way of managing obesity and several related comorbidities. By the same token, the study reignites the call for data-driven decision-making to grow the bariatric surgery specialization.

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