Outcomes of Laparoscopic Sleeve Gastrectomy Without Omentopexy and Gastropexy: A Review of Safety and Efficacy

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Abstract

Introduction: Laparoscopic Sleeve Gastrectomy (LSG) is a widely accepted surgical intervention for morbid obesity due to its effectiveness in weight reduction and comorbidity resolution. While omentopexy and gastropexy are sometimes performed to minimize complications such as gastric torsion and staple-line leaks, their routine necessity remains controversial. This review explores the outcomes, safety, and clinical significance of performing LSG without omentopexy and gastropexy in morbidly obese patients. A systematic review of existing studies was conducted, focusing on patient outcomes, complication rates, operative time, and long-term weight loss in LSG procedures performed without omentopexy and gastropexy. The findings indicate no significant increase in postoperative complications, including staple-line leaks or gastric torsion, in the absence of omentopexy and gastropexy. Additionally, operative time was reduced, contributing to overall surgical efficiency. Weight loss outcomes and patient recovery remained comparable to procedures with fixation techniques. Conclusion: Laparoscopic Sleeve Gastrectomy without omentopexy and gastropexy is a safe and effective approach for morbidly obese patients. The omission of these additional steps does not compromise surgical outcomes or patient safety. Future randomized controlled trials are needed to validate these findings and refine surgical guidelines.

Keywords: Bariatric Surgery, Laparoscopic Sleeve Gastrectomy, Omentopexy, Gastropexy, Morbid Obesity, Surgical Outcomes

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Introduction

Laparoscopic Sleeve Gastrectomy (LSG) has revolutionized bariatric surgery, offering an effective and relatively low-risk intervention for obesity management. The procedure's success lies in its ability to limit stomach capacity, reduce hunger hormones like ghrelin, and maintain a more

natural gastrointestinal pathway compared to other bariatric techniques. This combination contributes to sustained weight loss and enhanced quality of life [1,2]. Over the years, LSG has consistently demonstrated superior patient outcomes, making it a preferred choice for patients and surgeons alike.

However, discussions surrounding the necessity of additional steps, such as omentopexy and gastropexy, continue to evolve. Proponents of omitting these steps argue that natural postoperative adhesions are sufficient to stabilize the sleeve. Critics, however, highlight potential risks of torsion and the theoretical benefits of added stability [3]. These differing perspectives underline the need for more robust evidence to guide clinical decisions.

Recent meta-analyses have scrutinized the outcomes of LSG with and without omentopexy and gastropexy, revealing no significant differences in key parameters such as leak rates, weight loss, or resolution of comorbidities. This reinforces the view that simpler surgical protocols may suffice in many cases [4]. Nevertheless, surgeons must weigh these findings against individual patient characteristics and institutional protocols.

The debate extends to operative efficiency, as additional fixation steps can prolong surgery and increase the risk of anesthesia-related complications. For this reason, many institutions favor streamlined approaches, provided they adhere to established safety standards [5]. This review critically examines current evidence, offering practical insights for surgeons considering LSG without omentopexy and gastropexy.

Indications for Laparoscopic Sleeve Gastrectomy

LSG is a cornerstone intervention for managing morbid obesity and its related complications, such as metabolic syndrome, cardiovascular disease, and musculoskeletal disorders. Its indication extends beyond weight loss, addressing the complex interplay of hormonal and metabolic dysfunctions in obesity [6,7]. Patients with BMI thresholds exceeding 35 kg/m², particularly with associated comorbidities, are prime candidates for this intervention.

A multidisciplinary evaluation process is crucial in selecting appropriate candidates for LSG. This involves detailed medical, psychological, and nutritional assessments to optimize preoperative health and ensure adherence to postoperative guidelines. Factors such as untreated psychiatric conditions, substance abuse, or non-compliance with medical advice may contraindicate surgery [8,9].

Psychosocial readiness is equally important, as successful outcomes often hinge on patient engagement and lifestyle modifications. Preoperative counseling aims to set realistic expectations and prepare patients for the lifelong behavioral changes required post-surgery. This holistic approach improves both short- and long-term results [10].

In special populations, such as adolescents or elderly patients, LSG has demonstrated promising results with tailored indications. Studies highlight its effectiveness in mitigating early-onset obesity-related complications in younger patients and offering safer alternatives for older individuals with limited surgical options [11,12].

The growing acceptance of LSG as a primary and staged procedure underscores its versatility. For super-obese patients, it serves as a bridge, facilitating safer subsequent interventions by achieving significant weight loss and improving perioperative risk profiles [13].

Surgical Technique of LSG

LSG's standard operative steps are well-established, emphasizing precision to minimize complications. After establishing pneumoperitoneum, surgeons mobilize the greater curvature, meticulously dividing associated vessels to facilitate gastric resection. Using a calibration tube ensures consistency in sleeve dimensions, crucial for preventing postoperative complications [14].

The debate around staple line reinforcement remains contentious. Proponents argue that oversewing or using buttressing materials minimizes leaks and bleeding. However, randomized trials have yet to show clear superiority of one approach over another, leaving the decision to surgeon preference and institutional protocols [15].

Key technical considerations include maintaining an adequate distance from the pylorus during stapling and ensuring a smooth transition to the angle of His. Improper technique can result in strictures, leaks, or functional abnormalities, emphasizing the need for adherence to established guidelines [16].

Omission of omentopexy and gastropexy has not been definitively linked to increased risks of sleeve torsion or misalignment. Instead, surgeons rely on the natural adhesions that form during healing to stabilize the sleeve. This has been supported by studies showing comparable outcomes in leak rates and weight loss between cases performed with and without these steps [17].

Surgeons must remain vigilant for intraoperative challenges, such as anatomical variations or unexpected bleeding, which may necessitate deviations from the standard technique. The flexibility to adapt while maintaining safety is a hallmark of expert surgical practice [18].

Surgical Approach and Variations

The laparoscopic approach to LSG has set new benchmarks for patient recovery, combining minimal invasiveness with high efficacy. Compared to open surgery, laparoscopic techniques offer significant reductions in pain, hospital stays, and overall morbidity, driving their widespread adoption [19].

Variations in stapler size and resection extent allow surgeons to tailor the procedure to individual patient needs. For instance, larger gastric resections may benefit patients with higher BMIs, while more conservative approaches may suffice for lower-BMI individuals. This customization underscores the importance of preoperative planning [20].

Omentopexy and gastropexy are optional steps, often reserved for specific cases where additional sleeve stability is deemed necessary. However, emerging evidence suggests that omitting these steps in routine cases does not compromise outcomes. This simplification aligns with the broader trend toward more efficient, patient-centered surgical protocols [21].

Sleeve calibration techniques continue to evolve, with some surgeons experimenting with narrower or wider sleeves to optimize long-term metabolic outcomes. These variations highlight the procedure's adaptability, accommodating diverse patient populations [22].

Finally, newer technologies, such as robotic-assisted LSG, are gaining traction, promising enhanced precision and potentially improved outcomes. While still under investigation, these advancements may further refine the standard of care for LSG in the future [23].

Laparoscopic Sleeve Gastrectomy (LSG) has become one of the most commonly performed bariatric surgeries worldwide due to its simplicity and efficacy in treating morbid obesity. However, variations in surgical technique, such as omitting omentopexy and gastropexy, have raised concerns about potential complications and long-term outcomes. Omentopexy involves suturing the omentum to the staple line to reduce the risk of leaks, bleeding, and twisting of the stomach, while gastropexy secures the stomach to prevent torsion and migration. Without these adjunctive measures, there is ongoing debate regarding their impact on surgical complications and patient outcomes [24].

One of the most significant complications associated with LSG is staple line leakage, which can lead to severe morbidity and prolonged hospital stays. The absence of omentopexy and gastropexy has been hypothesized to increase the risk of staple line tension, potentially contributing to leaks. Studies suggest that while these adjunctive techniques may reduce tension on the staple line, their omission does not significantly increase the incidence of staple line leakage when meticulous surgical techniques are employed [25].

Bleeding from the staple line is another well-recognized complication following LSG. Advocates of omentopexy propose that the omentum serves as a protective layer, reducing the risk of bleeding by providing additional reinforcement. However, recent studies indicate that the absence of omentopexy does not result in a significantly higher rate of staple line hemorrhage, provided that staple line reinforcement techniques are properly executed during surgery [26].

Gastric torsion or volvulus is a rare but severe complication that can occur after LSG. Gastropexy is often performed to anchor the stomach and reduce the likelihood of this occurrence. In the absence of gastropexy, there have been isolated reports of gastric volvulus, but evidence remains insufficient to conclusively support routine gastropexy as a preventive measure. Surgeons must remain vigilant for symptoms such as persistent vomiting and abdominal pain postoperatively [27].

Postoperative gastroesophageal reflux disease (GERD) is another concern following LSG, and its prevalence appears to be influenced by the surgical technique. It has been proposed that omitting gastropexy and omentopexy may alter gastric anatomy, predisposing patients to reflux. However, studies have shown mixed results, with some indicating no significant difference in GERD incidence with or without these adjunctive techniques [28].

The impact of omitting omentopexy and gastropexy on weight loss outcomes following LSG remains an area of ongoing investigation. While these techniques are primarily aimed at reducing complications rather than enhancing weight loss, some researchers hypothesize that alterations in gastric anatomy may affect satiety and food tolerance. To date, there is insufficient evidence to suggest that their omission adversely impacts long-term weight loss outcomes [29].

Hospital stay duration is an important indicator of postoperative recovery and surgical success. Some studies have suggested that omentopexy and gastropexy may reduce complications, thus potentially shortening hospital stays. However, recent data indicate no statistically significant difference in length of stay between patients undergoing standard LSG versus LSG without these adjunctive techniques [30].

The learning curve associated with LSG is another factor to consider when evaluating outcomes and complications. Surgeons with less experience may rely on adjunctive measures like omentopexy and gastropexy to mitigate potential risks. However, experienced surgeons report comparable outcomes even without these techniques, highlighting the importance of surgical expertise over technique variation [31].

Patient-reported outcomes, including quality of life and satisfaction, are critical metrics following bariatric surgery. The omission of omentopexy and gastropexy does not appear to have a substantial impact on these subjective measures. Studies assessing long-term follow-up have shown no significant differences in patient satisfaction scores or quality of life indices between groups [32].

Nutritional deficiencies are common after LSG, and the surgical technique may play a role in influencing nutrient absorption. While omentopexy and gastropexy primarily address mechanical and anatomical concerns, their omission does not appear to exacerbate postoperative nutritional deficits. Regular monitoring and supplementation remain the mainstay of nutritional management in these patients [33].

Postoperative nausea and vomiting (PONV) are frequent concerns following LSG. It has been hypothesized that anatomical changes resulting from the absence of gastropexy and omentopexy may contribute to delayed gastric emptying and PONV. However, clinical studies have not shown a significant increase in PONV rates among patients who underwent LSG without these techniques [34].

The cost-effectiveness of performing adjunctive procedures during LSG is another factor for consideration. Omentopexy and gastropexy add operative time and potentially increase surgical costs. Economic analyses suggest that the omission of these steps may reduce costs without significantly compromising patient outcomes, making the approach more resource-efficient [35].

Complications such as strictures or stenosis of the gastric sleeve can occur postoperatively. These complications are usually associated with staple line mismanagement rather than the omission of omentopexy or gastropexy. Proper surgical technique, including avoiding excessive narrowing of the gastric sleeve, remains paramount in preventing such outcomes [36].

Reoperation rates are an important indicator of surgical success and complication management. While adjunctive techniques aim to prevent complications, the absence of omentopexy and gastropexy does not appear to significantly increase the likelihood of reoperation. Studies suggest that reoperation rates are more closely tied to the surgeon's skill and intraoperative decision-making [37].

Patient education and preoperative counseling play vital roles in managing expectations and preventing postoperative complications. Clear communication about the surgical procedure,

potential complications, and recovery trajectory remains essential, regardless of whether omentopexy or gastropexy is performed [38].

Long-term follow-up is crucial in assessing the outcomes of LSG, particularly in patients who did not undergo adjunctive procedures. Data from long-term studies indicate no significant differences in weight maintenance, complication rates, or patient satisfaction between groups with and without omentopexy and gastropexy [39].

The role of adjunctive techniques in reducing staple line complications remains controversial. While some studies advocate for their routine use, others emphasize that proper staple line reinforcement and surgical precision are more critical in preventing complications [40].

In conclusion, the omission of omentopexy and gastropexy during LSG does not appear to significantly impact complication rates, weight loss outcomes, or patient satisfaction when meticulous surgical techniques are followed. Further multicenter, randomized controlled trials are needed to provide definitive evidence on the necessity of these adjunctive measures [41].

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