Outcome of Staple Line Reinforcement during Laparoscopic Sleeve Gastrectomy with Oversewing and Fibrin Sealant

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BACKGROUND

Laparoscopic sleeve gastrectomy (LSG) has become an increasingly popular bariatric procedure over the past decade. Despite its proven safety and effectiveness, staple line leak and bleeding are considered one of the most worrisome complications. Several surgical materials and techniques for staple line reinforcement (SLR) have been proposed to reduce complications and to improve outcomes. This study aimed to evaluate the impact of SLR with oversewing and fibrin sealant in LSG.

METHODS

A dual center retrospective cohort study was conducted on 132 patients who underwent standard LSG from January 2015 to August 2020 at Bhumibol Adulyadej hospital and Bangkok Metropolitan Administration General hospital. Patients were divided into 2 groups: Group 1 (n = 71) underwent LSG without SLR, and group 2 (n = 61) underwent SLR with oversewing (continuous seromuscular suture) and overlying fibrin sealant along entire staple line. Preoperative patient characteristics, total operative time, operative blood loss, postoperative complications (staple line leak, bleeding, stenosis, infection), and length of hospital stay were collected from medical record review. All procedures were performed by experienced bariatric surgeons. Routine water-soluble contrast swallow study was done for all patients postoperatively.

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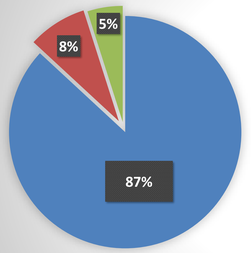
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PATIENT CHARACTERISTICS

	Group 1	Group 2	P value
Age	38.42	41.62	0.141
Gender			
Male	27 (38%)	26 (43%)	0.360
Female	44 (62%)	35 (57%)	
Weight (kg)	131.46	116.58	0.002
Height (m)	1.66	1.70	0.007
BMI (kg/m^2)	47.88	40.25	<0.001
ASA classification	2.29	2.38	0.528
Operative time (min)	115.13	137.18	0.003
Operative blood loss (ml)	23.52	30.74	0.104

POSTOPERATIVE OUTCOMES

	Group 1	Group 2	P value
Length of stay (days)	4.45	4.16	0.136
Leakage	0 (0%)	0 (0%)	-
Bleeding	1 (1.4%)	0 (0%)	0.538
Stenosis	0 (0%)	0 (0%)	-
Surgical site infection	1 (1.4%)	0 (0%)	0.538
Postoperative nausea / vomiting	0 (0%)	2 (3.3%)	0.212



TYPES OF SLR PERFORMED IN GROUP 2

- Oversewing with fibrin sealant
- Oversewing only
- Fibrin sealant only

RESULTS

There was no significant difference in age, gender, ASA classification, and operative blood loss between groups. Mean preoperative body mass index was higher in group 1 than in group 2 (47.88 vs 40.25, p < 0.001). Mean total operative time was significantly shorter in patients without SLR compared to those with SLR (115.13 vs 137.18, p = 0.003). No staple line leak was detected in the study. Staple line bleeding was not different between groups (1.4% vs 0%, p = 0.538). One patient from group 1 suffered from suspected intra-abdominal bleeding but later recovered without reoperation. No stricture or stenosis was observed in neither group, however, 2 patients experienced severe postoperative nausea and vomiting following SLR which were successfully treated conservatively. No statistical difference in surgical site infection (1.4% vs 0%, p = 0.538) and length of stay was found between groups (4.45 vs 4.16, p = 0.136).

CONCLUSION

Our study suggests that SLR during LSG with oversewn seromuscular suture and fibrin sealant has no significant effect on postoperative complication rates (i.e., leakage, bleeding, or stenosis). While technically safe, SLR procedures are associated with longer overall operative time. Our limitations included the retrospective nature of the study design and the inability to obtain an actual SLR performance time. Larger-scale prospective randomized trials with more comprehensive study designs are essential to strategically evaluate the effectiveness of SLR in LSG.

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