SUTURE RETRACTION OF THE LIVER IN FOREGUT AND BARIATRIC SURGERY: A SAFE, EFFICIENT, AND COST-EFFECTIVE TECHNIQUE

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Introduction

Laparoscopic foregut and bariatric surgical procedures frequently require liver retraction, but many mechanical retractors require additional trocars, equipment, and come with the risk of increased morbidity. One technique that can be an alternative for retracting the left lobe of the liver is utilizing a double sling suture to the diaphragm through a small subxiphoid incision. Here we describe our technique and experience utilizing this method in various laparoscopic foregut and bariatric surgical procedures.

Methods and Procedures

A retrospective chart review was performed on all patients who underwent laparoscopic sleeve gastrectomy, gastric bypass, LINX placement, and hiatal hernia repair with fundoplication from June 2012 to August 2021. Two different MIS surgeons performed the procedures (PR, LM). A 0-Vicryl suture is passed through the diaphragm and the two ends are externalized to the left and right side of the falciform ligament in a double sling fashion and brought out through a single, 2 mm, subxiphoid incision. Traction on both ends of the sling elevates the left lobe of the liver and exposes the operative field. We now report on its feasibility and incidence of complications – including liver injury, and need for conversion to conventional mechanical retractors.

Indication	N (709)
GERD	301
Morbid obesity	251
Hiatal hernia	81
Super obesity (BMI >60)	26
Achalasia	25
Dysphagia	9
Gastric outlet obstruction	8
Arcuate ligament syndrome	2
Esophageal mass	2
Slipped band	1
Eroded band	1
Chronic marginal ulcer	1

Table 1: Indications for surgery.

Female	
N	458
Age (average)	54.3
BMI	37.1
Male	
N	251
Age	54.4
BMI	35.7

Table 2: Patient demographics with mean age and BMI.

Outcome	N (709)
Successful suture retraction	646
Conversion to mechanical retractor	63
Liver injury	0

Table 3: Outcomes of suture retraction in all cases.

Results

Seven hundred and nine patients were included in the study. Indications for surgery in our cohort included morbid obesity (35.4%), GERD (42.5%), hiatal hernia (11.5%), super obesity (3.7%), achalasia (3.5%) dysphagia (1.3%), GOO (1.1%), arcuate ligament syndrome (0.3%), esophageal mass (0.3%), chronic marginal ulcer (0.1%), slipped band (0.1%), and eroded band (0.1%).There were 458 females and 251 males. The mean ages and BMI were 54.3 years/37.1 kg m2 for females, 53.8 years/33.1 kg m2 for males, and 54.4 years/35.7 kg m2 for the entire cohort. There were no liver injuries. Suture retraction was successfully utilized in 646 out of 709 cases (91%). In the remaining 63 cases (9%), a mechanical liver retractor needed to be used.

Conclusion

The double sling suture method is a safe, efficient, and cost-effective alternative to conventional mechanical liver retraction techniques. Proficiency with suturing by some methodology (laparoscopic freehand, Endostitch, robotic-assisted) is required.