



The Effect of GORE SEAMGUARD® Bioabsorbable Staple Line Reinforcement On Internal Hernia Incidence After Laparoscopic Roux-en-Y Gastric Bypass

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Introduction

- ▶ Most surgeons suture close the mesenteric defects created at the time of laparoscopic gastric bypass.
- ▶ Glycolide copolymer staple-line reinforcement sleeves (GORE SEAMGUARD® Bioabsorbable Staple Line Reinforcement – W. L. Gore & Associates, Inc, Flagstaff, Ariz) can be applied onto linear staplers when dividing small bowel mesentery.
- ▶ Hitherto the main benefits of SEAMGUARD product are (i) reduced bleeding and (ii) increased staple line strength¹.
- ▶ We noted from reoperating on patients with SEAMGUARD product that there is significant adhesion formation between the strip and neighboring native tissue. Therefore, in 2003, one surgeon (TB) at our unit switched from suturing all the mesenteric defects closed to applying SEAMGUARD product to all cut mesenteric ends. The presumption was that SEAMGUARD product induced adhesiogenesis.

Objective

- ▶ This study has been designed to observe the impact of using SEAMGUARD product on the incidence of internal hernia.

Methods

- ▶ A retrospective chart review was performed of all patients undergoing LRYGB at Strong Health Bariatric Center, Highland Hospital who developed symptomatic bowel obstruction requiring operative intervention between Jan 1, 2003 and September 15, 2006.
- ▶ The incidence of internal hernias was compared in patients who received SEAMGUARD product and no suture closure of defects with those patients in whom all mesenteric defects were suture closed.
- ▶ Because the difference between antecolic and retrocolic technique has been previously described, a second analysis of the incidence of internal herniation at the enteroenterostomy and Peterson's space alone was also compared after mesocolic hernias were excluded.
- ▶ Fishers exact test was used.

Results

Table 1: Internal Hernia Incidence and SEAMGUARD Product Usage

	Non-SEAMGUARD Product	SEAMGUARD Product	P
Total number of patients undergoing LRYGB	1350	354	
Internal hernia incidence	40(2.9%)	3(0.8%)	P <= 0.05
Internal hernia location	Peterson's space: 4 Enteroenterostomy: 16 TMesocolic:20	Enteronterostomy: 1 TMesocolic:2	

*by Fisher's Exact Test

Table 2: Internal Hernia Excluding Transverse Mesocolic

	Non-SEAMGUARD Product	SEAMGUARD Product	P
Total number of patients undergoing LRYGB	1350	354	
Internal hernia incidence	20	1	P <= 0.05
Internal hernia location	Enteroenterostomy: 16 Peterson's space: 4	Enteronterostomy: 1	

*by Fisher's Exact Test

Discussion

- ▶ It seems unlikely that any one technique will prevent internal hernias from occurring. However, this risk may be minimized.
- ▶ Such methods include proper rotation of the roux limb, avoiding paraduodenal hernia through careful exposure, and closure of all potential hernia defects at the enteroenterostomy, Petersen's and transverse mesocolic sites; by suture or by other means.
- ▶ This comparative investigation suggests that the use of glycolide copolymer staple-line reinforcement (SEAMGUARD product) alone significantly decreases the incidence of internal hernia formation at the enteroenterostomy and Peterson's defects in gastric bypass operations.

References

1. Nguyen NT, Longoria M, Weelbourne S, Sabio A; Glycolide copolymer staple-line reinforcement reduces staple site bleeding during laparoscopic gastric bypass: a prospective randomized trial. Arch Surg. 2005 Aug;140(8):773-8.

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Internal Hernias After Laparoscopic Roux-en-Y Gastric Bypass may be Prevented with GORE SEAMGUARD® Bioabsorbable Staple Line Reinforcement



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Introduction

Internal hernias are an important and common complication following RNYGB. The two potential spaces that internal hernias can occur are the jejunostomy mesenteric defect and the retro Roux limb space (Figure 1). The jejunostomy is usually closed with a running stitch; however the retro Roux limb space remains a common potential space for hernias. We hypothesize that substantial tissue fusion will prevent a Peterson's hernia by utilizing GORE SEAMGUARD® Bioabsorbable Staple Line Reinforcement on the mesentery staple line of the jejunum during creation of a Roux limb. We evaluated SEAMGUARD® product as a preventative measure for the development of these hernias in post-op laparoscopic gastric bypass patients.

Results

We have seen no internal hernias from the retro Roux limb space in over 300 patients SEAMGUARD product was used on the mesentery staple line of the jejunum. Five patients were re-operated on, ranging from POD #37 to week 27. All had SEAMGUARD product applied to the mesentery at the roux limb division. Three patients were re-operated on for port site hernias and one for acute cholecystitis. During the re-operation, images were taken at the retro-Roux limb space. In all 5 patients the SEAMGUARD product seemed to create tissue fusion between the mesentery of the Roux limb and the mesentery of the transverse colon. No internal hernias were identified in these 5 patients.

Methods

We have prospectively followed all pts undergoing Roux-en-Y gastric bypass since February 2005. Patients are routinely followed in clinic and we have performed all necessary re-operations since then.

Conclusion

SEAMGUARD product may be a possible way to prevent retro-Roux hernias in patient undergoing laparoscopic Roux-en-Y gastric bypass. Our next step is to conduct an animal study looking at the adhesion formation between the SEAMGUARD product applied to the small bowel mesentery and the mesocolon.

Figure1:
Roux-en-Y Gastric Bypass, figure. [1]
Scarlet arrow demonstrates the jejunostomy mesenteric defect and the grey arrow depicts the retro Roux limb space.

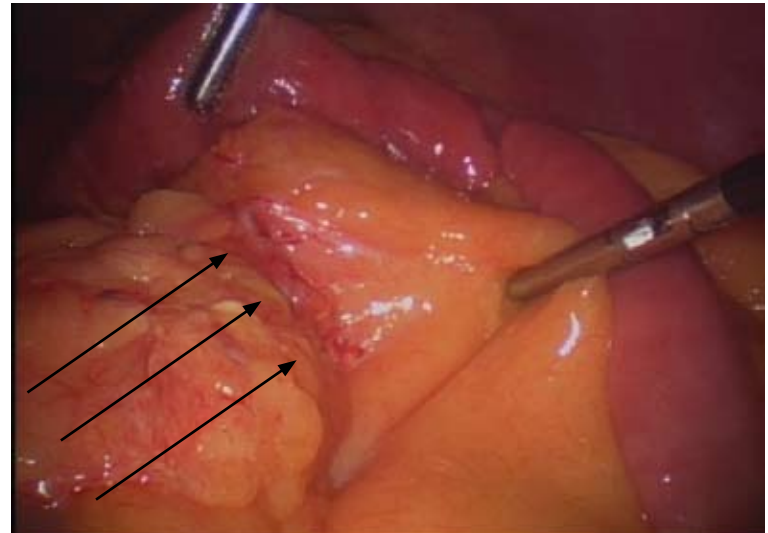
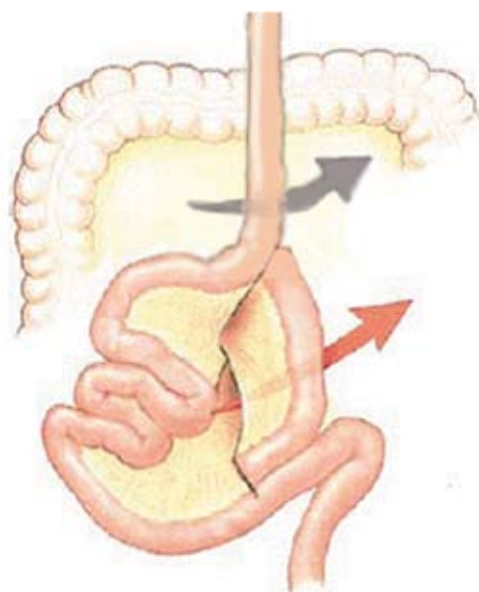


Figure 2: Roux limb with SEAMGUARD product applied to mesentery. (Arrows)

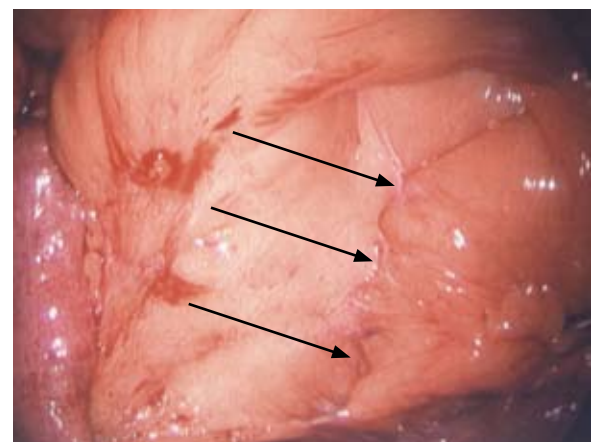
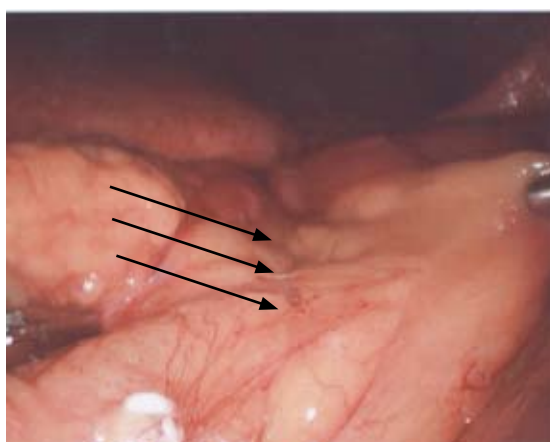
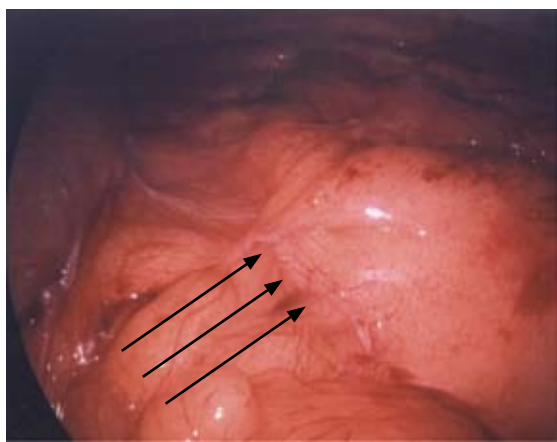


Figure 3-5: Further examples of Roux limb with SEAMGUARD product applied to mesentery (Arrows)

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