Buttressing Material: Yes or No?

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Disclosures

- Allergan: consulting agreement and grant support
- Covidien: consulting agreement
- Gore: grant support
Buttressing Material

TO BE OR NOT TO BE
Introduction

- Staple line buttress material—either absorbable or permanent—is widely used in bariatric surgery.
- Most bariatric surgical procedures—with the exception of adjustable gastric banding—require the creation of staple lines.
- While there are a large number of potential complications from bariatric surgery, two of the most clinically significant complications are leakage of enteric contents or bleeding along a staple line.
- Technical integrity of the staple line is crucial in preventing such complications.
Causes of Staple Line Leaks

- Increased intraluminal pressure, tissue ischemia, or technical issues are the main cause of leaks.
- The effect of increased intraluminal pressure is particularly important in bariatric procedures where an obstruction can lead to markedly elevated lumenal pressures.
- Elevated lumenal pressures can stress the integrity of the staple lines.
Causes of Staple Line Bleeding

- Intralumenal and extralumenal bleeding along staple lines is another known complication of abdominal surgery.[4]
- The technical integrity of the staple line—especially the appropriate “height” of staples with respect to the thickness of the tissue being stapled—is a critical factor in prevention of bleeding.
Several animal studies have reported dramatically improved resistance of staple lines to intraluminal pressure if buttressing material is used.[5–7]

The reason for the success of buttressing material in this setting is the fact that the material distributes tension over a greater serosal surface area than staples alone.


A second cause of staple line leaks is tissue ischemia.

It is not clear whether staple line buttress material actually provides any benefit in terms of protecting against this type of leak.
A third major cause of leaks are technical issues. These include failure of the stapling device itself (failure of staples to deploy properly) or incorrect choice of stapler for the tissue being divided.

Each stapler manufacturer provides specific instructions regarding the thickness of tissue appropriate for each device, but tissue thickness in the clinical setting is highly variable, and the correct choice of staple device is still best determined by a clinician with extensive clinical experience using the device.
Thickness of Buttressing Material

- The thickness of the buttress material must be taken into account when deploying a stapler.
- Bovine pericardial strip (Peri-Strips Dry, Synovis Surgical Innovations, St. Paul, Minnesota) adds about 0.8 mm (0.4 mm for each of the two sides of the buttress material).
- The absorbable synthetic polyglycolide/trimethylene carbonate buttress material (Seamguard bioabsorbable, W. L. Gore & Associates, Inc., Flagstaff, Arizona) adds a total of 0.5 mm thickness.
Clinical Evidences 1

- In several studies, there were fewer leaks in the group with buttress material, compared to the nonbuttressed group.
This decrease in leak rate has been shown both with absorbable and nonabsorbable buttress materials.

One recent study reported that buttressing of the circular staple line with bovine pericardium strips during LRYGB was associated with an increased staple line adverse event rate.

Three leaks (and no intraoperative staple line failures) occurred in 419 patients without BPS buttressing, and 3 leaks and an anastomotic staple line failure occurred in the 81 patients with BPS buttressing (.7% versus 4.9%, P = .02).

In contrast to some of the studies in patients undergoing gastric bypass, recent reviews of leak rates after sleeve gastrectomy found no benefit to buttress material.


Video of SLG