

# GI Anastomosis Using Disposable Skin Staples

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## In the Literature

Rosenbaum JM, Coolman BR, Davidson BL, Daly ML, Rexing JF, Eatroff AE. The use of disposable skin staples for intestinal resection and anastomosis in 63 dogs: 2000 to 2014. *J Small Anim Pract.* 2016;57(11):631-636.

## FROM THE PAGE ...

GI resection and anastomosis is a routine procedure in veterinary practice. Hand-sewn interrupted or continuous suture patterns are used in traditional GI anastomosis. Alternative approaches include the use of mechanical stapling devices or skin staplers. Most GI anastomoses performed in humans incorporate mechanical staplers,<sup>1</sup> but their use in small animal surgery has been limited by cost, patient size, and clinician familiarity with the instrumentation. However, several recent studies have demonstrated comparable results with hand-sewn vs mechanically stapled anastomoses.<sup>2</sup> The use of disposable skin staplers for GI anastomosis was originally described in research dogs in 2000,<sup>3</sup> but limited clinical reports exist.

This retrospective clinical study reported outcome and complications following GI resection and anastomosis using skin staples in 63 dogs over a 14-year period at 2 institutions. Clinical variables (eg, indications for surgery, number of procedures, presence of peritonitis, surgeon experience, intestinal location, patient signalment) were examined. Case inclusion required a minimum of 10-day follow-up to evaluate for dehiscence and short-term mortality. The most common indications were neoplasia (31.7%) and foreign body (30.2%). Peritonitis was present in 34.9% of cases. Intestinal dehiscence was documented in 4.8% cases; 2 of these patients were ultimately euthanized. Overall mortality rate was 12.7%. No risk factors associated with mortality were identified.

These results suggest that GI anastomosis can be performed successfully using skin staples. The technique is technically simple, fast, and inexpensive. The rate of dehiscence and mortality was comparable to published literature using other techniques. The number of cases—although drawn from 2 institutions over 14 years—was insufficient to provide meaningful conclusions of specific inclusion or exclusive criteria for use or of risk factors for complications using this technique. As with any new technique, diligent practice should precede incorporation into clinical use. Independent of closure technique, adhering to the basic principles of GI surgery as detailed on page 77 is key to success.

## TABLE

### COMPARISON OF CLOSURE MATERIALS FOR GI ANASTOMOSIS

Type	Size	Material	Advantages	Disadvantages
Skin staples	Regular (4.8 x 3.4 mm)	Stainless steel	Fast, simple, inexpensive	Evert tissue, reduce lumen
Sutures	3-0 or 4-0	Absorbable: Monocryl/Biosyn	Controlled placement, absorbable, inexpensive	Comparatively slow, reduce lumen
Mechanical stapling device	GIA 50 or 90, and TA 60 or 90; 3.5 mm staples	Stainless steel	Fast, automated staple/cut, double row staples	Large size, high cost, requires technical expertise

GIA= gastrointestinal anastomosis, TA= thoracoabdominal

## ... TO YOUR PATIENTS

Key pearls to put into practice:

For GI anastomosis using suture or staples:

- 1 Plan margins of resection
  - ▶ Ensure tissue viability and integrity—color, feel, contractility.
  - ▶ Preserve blood supply immediately adjacent to resection.
- 2 Execute anastomosis
  - ▶ Place stay sutures at mesenteric border. Ensure apposing bowel orientation and facilitate manipulation.
  - ▶ Engage the holding layer (ie, the submucosa). Trim back mucosa as needed.
- 3 Evaluate repair
  - ▶ Leak check using intraluminal gas or sterile saline. Close defects.
  - ▶ Wrap anastomosis site in a loop of omentum.

**The use of disposable skin staplers for GI anastomosis was originally described in research dogs in 2000,<sup>3</sup> but limited clinical reports exist.**

## References

1. Leung TT, MacLean AR, Buie WD, Dixon E. Comparison of staples versus handsewn loop ileostomy closure: a meta-analysis. *J Gastrointest Surg.* 2008;12(5):939-944.
2. Duell JR, Thieman-Mankin KM, Roach MC, et al. Frequency of dehiscence in hand-sutured and stapled intestinal anastomoses in dogs. *Vet Surg.* 2016;45(1):100-103.
3. Coolman BR, Ehrhart N, Pijanowski G, Ehrhart EJ, Coolman SL. Comparison of skin staples with sutures for anastomosis of the small intestine in dogs. *Vet Surg.* 2000;29(4):293-302.