

New double-stapled anastomotic technique to avoid crossing staple lines

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Introduction

Anastomotic leak (AL) after rectal surgery is a major clinical problem observed in 2.7–15 % of patients and even up to 26 % in some older reports [1–3].

Well-recognized risk factors for AL are localization (increased incidence in the distal tract, highest in the lower rectum), previous radiotherapy (locally advanced rectal cancer), emergency operation, male sex, advanced age, diabetes mellitus, vasculopathy, obesity, chronic obstructive pulmonary disease, denutrition, chronic corticosteroidal use, unknown vascular abnormalities, multiple numbers of stapler firings during rectal division and low case volume per center (<20/year).

Double-stapled colorectal anastomosis is well known to significantly increase the incidence of anastomotic leak and strictures [4]. First of all, because there are at least two staple lines crossing each other, second because the anastomosis creates stapled corners (the so-called dog ears).

Both of these factors increase the risk of ischemia at the anastomosis.

Our new technique combines a new way of performing low colorectal anastomosis (LCA) with direct transanal management.

The new LCA technique is characterized by the complete removal of the two suture lines (of the descending colon and the rectal stump) that are involved in the anastomosis. Generally, the rectal stump is closed by firing at least two mechanical staplers which increases the risk of AL. With this new technique, aimed at reducing the incidence of AL, the suture line is completely removed while performing the colorectal anastomosis.

Moreover, direct transanal inspection makes it possible to perform leak tests and eventually to reinforce and/or to directly repair the suture line, further reducing AL.

Surgical technique

- Low anterior resection with total mesorectal excision, either open laparoscopic or robotic.
- A circular anal dilator (CAD) is positioned and kept in place with four 0 silk sutures at the four cardinal points. The CAD is a transparent device that dilates the anus, protects the first 2 cm of the anal canal and allows a 360° inspection of the rectum up to 10 cm from the anal verge.
- Rectal inspection with purse string.

Suture anoscope

- Closure of the rectum with a linear or curved stapler with transanal inspection through the CAD.

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- Transanal placement of four 2–0 prolene sutures on the rectal stump, two at the extremities of the suture line (left and right) and other two 1 cm medial to each of the previous two sutures.
- A circular stapler is introduced through the CAD (29 or 33 mm KOL™ stapler, Touchstone International Medical Science Co Ltd, Suzhou, Jiangsu, China), the four tails of the prolene stitches are introduced through the windows (two on the left and two on the right side of the instrument) and gently pulled through the anus and loaded in the stapler to resect the previous suture line including dog ears. Then the stapler is fired.
- The two rings are extracted from the stapler and carefully examined using the CAD.
- The termino-terminal anastomosis is carefully inspected.
- A leak test can be performed (if negative the protective stoma is not fashioned).
- An eventual leak can be transanally repaired.

Conflict of interest None.

References

1. Platell C, Barwood N, Dorfmann G, Makin G (2006) The incidence of anastomotic leaks in patients undergoing colorectal surgery. *Colorectal Dis* 9:71–79
2. Hyman N, Manchester TL, Osler T, Burns B, Cataldo PA (2007) Anastomotic leaks after intestinal anastomosis: it's later than you think. *Ann Surg* 245:254–258
3. Bell SW, Walker KG, Rickard MJ et al (2003) Anastomotic leakage after curative anterior resection results in a higher prevalence of local recurrence. *Br J Surg* 90:1261–1266
4. Ito M, Sugito M, Kobayashi A, Nishizawa Y, Tsunoda Y, Saito N (2008) Relationship between multiple numbers of stapler firings during rectal division and anastomotic leakage after laparoscopic rectal resection. *Int J Colorectal Dis* 23:703–707