

Totally laparoscopic stapled anastomosis after distal gastrectomy

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Abstract: There is wide variation in technique for anastomosis in laparoscopic gastrectomy. Du *et al.* report a novel stapled method for gastrojejunal using a circular stapler, applied in 34 patients. Compared to an intracorporeal handsewn anastomosis, this technique was equally effective and safe, but required less operative time (239 *vs.* 203.6 minutes). Whilst laparoscopic distal gastrectomy is undertaken commonly in some Asian countries, Western surgeons deal with a smaller gastric cancer case load, and face significant challenges if considering this approach for their practices.

Key Words: Gastrectomy; gastric cancer surgery; anastomosis; surgical technique



Submitted May 04, 2013. Accepted for publication May 24, 2013.

doi: 10.3978/j.issn.2224-4778.2013.05.14

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Restoration of gastrointestinal continuity after laparoscopic gastric cancer resection is challenging. While there are numerous large series reporting the feasibility of laparoscopic gastrectomy, the wide variation in techniques used to perform either esophago-jejunal or gastro-jejunal anastomosis suggests that surgeons are continuing to look for the optimal method.

Du *et al.*'s article in *Journal of Gastrointestinal Surgery* (1) reports a novel method of stapled gastrojejunal anastomosis for laparoscopic Billroth II gastrectomy. Essentially the anvil of a circular stapler is introduced via a gastrotomy on the greater curvature of the residual proximal stomach and the rod tip of the anvil is withdrawn through the anterior wall of the stomach with the assistance of a suture attached to the rod tip. The gastrotomy is then stapled closed. A circular stapler is then introduced via the abdominal wall incision through which the gastrectomy specimen was removed and inserted into a jejunal enterotomy 10 cm distal to the planned jejunal anastomosis site. The stapler is then fired to create a gastrojejunal anastomosis, and withdrawn. An endoscopic linear stapler is subsequently introduced via the jejunotomy to perform a Finney type stricturoplasty before a second firing of the linear stapler is used to close the jejunotomy.

In a series of 70 patients, the stapled anastomotic

technique was performed in 34 patients and compared to a non-randomised comparison group of 36 patients who had an intracorporeal handsewn double layer gastro-jejunosomy performed by the same surgeon. Operative, post-operative, in hospital stay and 90 days follow-up outcomes were assessed, with the only significant difference being a shorter operative time (239 *vs.* 203.6 minutes) for the stapled anastomosis group. This difference is somewhat at odds with the reported 40 minutes time for a hand sutured anastomosis and a 20-25 minute time for stapled anastomosis. No complications were reported for the patients with a stapled anastomosis and the technique is clearly a feasible way of performing a laparoscopic Billroth II anastomosis.

There are a number of ways of restoring gastrointestinal continuity after a distal gastrectomy. Billroth I, Billroth II and Roux-en-Y reconstruction techniques are all used. Whether performed open (2,3) or laparoscopically (4), the anastomoses are more quickly constructed with stapling devices than hand-sewn techniques and with otherwise equivalent results. More commonly circular stapling devices have been used, but linear stapled anastomoses have also been reported (5).

The majority of series of laparoscopic distal gastrectomy variants utilise a Billroth type reconstruction rather than

a Roux limb. This avoids the need for a jejunum-jejunal anastomosis and thus perhaps simplifies and shortens the procedure. However the use of Billroth I and II procedures does seem somewhat at odds with the superior outcomes in terms of decreased bile reflux and/or gastric food stasis associated with the Roux limb, seen both after ulcer (6) and cancer (7,8) resectional surgery. Although the same rationale of ease of completion with a Billroth reconstruction was applied by some surgeons performing open surgery, the principles of reconstruction should not be lost purely to facilitate completion of a procedure laparoscopically. Meta-analysis (9) suggests that use of a Roux limb is not associated with increased operative complications but is associated with decreased reflux and increased quality of life.

It is clear on reviewing the laparoscopic gastric cancer literature that it is almost entirely based on Eastern experience, particularly Korean and Japanese. Given the very high incidence of gastric cancer, the relative bias towards both early gastric cancer, and gastric cancer presenting predominantly in the distal stomach, surgeons in these countries have an enormous experience in distal gastrectomy. These countries have established the feasibility of performing a D2 type lymphadenectomy laparoscopically and hence the resectional component of the surgery has not changed with minimally invasive surgery. Laparoscopic resection has thus become a standard of care in many Eastern centres.

Western surgeons do not deal with anywhere near the same volume of gastric cancer, and the challenges of performing a D2 resection safely and thoroughly have perhaps been prioritized ahead of the application of minimally invasive surgery to gastric cancer resection. While it is performed by some in the West, the difficulties of overcoming a learning curve in a low volume environment are apparent. However, the obesity epidemic in the West means there are high volume bariatric surgeons for whom the application of a Roux-en-Y reconstruction after laparoscopic gastric bypass is now standard. Perhaps rather than evolving different techniques for Billroth reconstructions, the challenge is to combine the Eastern experience of laparoscopic gastric cancer resection with

the Western experience of laparoscopic Roux-en-Y reconstruction.

Acknowledgements

Disclosure: The authors declare no conflict of interest.

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Cite this article as: Bright T, Watson DI. Totally laparoscopic stapled anastomosis after distal gastrectomy. *Transl Gastrointest Cancer* 2013;2(S1):86-87. doi: 10.3978/j.issn.2224-4778.2013.05.14