



Digestive tract reconstruction pattern as a determining factor in postgastrectomy quality of life

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Core tip: Proximal gastrectomy is associated with the worst postoperative quality of life (QoL) and should be performed cautiously. The trend toward better QoL following the pouch procedure of total gastrectomy requires further robust support. Whether the use of Billroth- I gastroduodenostomy or Roux-en-Y gastrojejunostomy is optimal for distal gastrectomy remains controversial, but the Roux-en-Y gastrojejunostomy is likely preferable.

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Abstract

Postgastrectomy quality of life (QoL) is affected by various symptoms, and compared with the preoperative baseline QoL, is typically impaired for the first 6 mo after surgery. Thereafter, improvement to a stable QoL is observed at approximately 12 mo postoperatively. We consider the digestive tract reconstruction pattern to be a determining factor in postgastrectomy QoL among gastric cancer patients, and believe it requires further discussion. Proximal gastrectomy is associated with the worst postoperative QoL among gastrectomy procedures and should be performed cautiously. The trend of better QoL provided by the pouch procedure of total gastrectomy requires further robust support. Whether the use of Billroth- I gastroduodenostomy or Roux-en-Y gastrojejunostomy for distal gastrectomy is optimal remains controversial, but Roux-en-Y gastrojejunostomy is likely to be preferable.

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TO THE EDITOR

Gastric cancer is the fourth most common malignancy worldwide, and surgery remains the only established curative treatment for this disease in the resectable stages^[1,2]. With the development of standard surgery for gastric cancer, gastrointestinal surgeons have recently not only paid attention to how to “cure” the patients, but also have taken an increased interest in how to “care” for patients and improve quality of life (QoL). According to our experiences, postgastrectomy QoL is affected by various symptoms, such as reflux, dyspepsia, and pain. Compared with preoperative baseline QoL, postgastrectomy QoL is generally impaired within the first 6 mo postoperatively. However, by approximately 12 mo, QoL improves to a stable level. Recently, Karanicolas *et al*^[3] reported a cohort series and concluded that most postgastrectomy symptoms were resolved within 6 mo postoperatively. According to the Oxford 2011 level of evidence for treatment

benefits, the study by Karanicolas *et al* provided level 3 evidence^[4]. Similarly, other studies have also reported that 6 mo postgastrectomy might be the turning point of recovery in QoL (Oxford 2011 level 4 for treatment benefits)^[5,6]. We consider the digestive tract reconstruction pattern to be a prognostic indicator of postgastrectomy QoL among gastric cancer patients, and we therefore believe that this warrants further discussion.

First, the extent of resection and the reconstruction pattern for upper-third gastric cancer, *i.e.*, proximal gastrectomy with esophagogastrectomy or total gastrectomy with esophagojejunostomy, has been frequently discussed. The treatment guidelines of the Japanese Gastric Cancer Association have defined proximal gastrectomy as a modified surgical procedure for early (cT1) upper gastric cancer in cases in which at least half of the stomach can be preserved^[7]. This requirement must be met for the sake of both oncologic and QoL outcomes. A meta-analysis has reported the disadvantages of proximal gastrectomy; total gastrectomy achieved a lower recurrence rate (Peto OR = 0.53, $P = 0.004$), whereas proximal gastrectomy was associated with higher morbidity (OR = 0.11, $P < 0.00001$) with respect to reflux esophagitis (OR = 0.04, $P < 0.00001$) and anastomotic stenosis (OR = 0.14, $P < 0.00001$) (Oxford 2011 level 1- for treatment harms)^[8]. Therefore, advanced upper-third disease is ineligible for proximal gastrectomy.

Additionally, total gastrectomy appears to be overtreatment for early upper gastric cancer, although long-term persistent or moderate-to-severe gastroesophageal reflux is often observed in cases of proximal gastrectomy for these early diseases. This is challenging for gastric cancer surgeons when considering and choosing the appropriate method of proximal gastrectomy. To improve postgastrectomy QoL, it is possible that some modified reconstruction procedures can be used as alternative approaches, such as interposition of the jejunum with or without a pouch and double tract reconstruction. These surgical approaches are designed to reduce reflux. Whether these modified reconstruction patterns should be used in general practice is unclear. Opinions and experience are likely to be diverse among surgeons, and indeed, there is no robust evidence to support their use.

In cases of total gastrectomy for upper and middle gastric cancer, reflux appears to be less common, but the limited intake volume and abandoned duodenal passage may impair postgastrectomy QoL. The modified reconstruction patterns concern Roux-en-Y esophagojejunostomy with a pouch, jejunal interposition with or without a pouch, and double tract reconstruction. Several small-sized studies have reported benefits of these modified reconstruction patterns, and a meta-analysis has also emphasized improved QoL following the use of pouch reconstruction methods (Oxford 2011 level 1- for treatment benefits)^[9,10]. Before surgery, the possible QoL and symptoms following each procedure should be discussed with patients. Indeed, these outcomes should be the focus of future research.

Second, the reconstruction pattern used in distal gastrectomy is also controversial due to the consideration of postgastrectomy QoL. In a cohort study, only Billroth-II reconstruction was performed in distal gastrectomy^[3]. Billroth-II gastrojejunostomy is currently considered to be associated with bile reflux, biliary gastritis, and even the risk of remnant stomach cancer, which could therefore influence postgastrectomy QoL. Thus, two other common approaches, Billroth-I gastroduodenostomy and Roux-en-Y gastrojejunostomy, have been preferred by growing numbers of surgeons. The Japanese National Cancer Center Hospital reported a shift from performing a majority of Billroth-I gastroduodenostomy procedures to Roux-en-Y gastrojejunostomy in 1997, whereas Billroth-II gastrojejunostomy is no longer performed^[11]. A recent randomized controlled trial compared these three reconstruction patterns and concluded that Roux-en-Y gastrojejunostomy was superior to Billroth-I and Billroth-II with Braun anastomosis in terms of the frequency of bile reflux (Oxford 2011 level 2 for treatment harms)^[12]. However, both this study and another multicenter trial also suggested that the postoperative QoL assessment was comparable between Roux-en-Y gastrojejunostomy and Billroth-I procedures (Oxford 2011 level 2+ for treatment benefits)^[12,13]. We must now consider whether Billroth-II gastrojejunostomy is out of date in clinical practice.

Moreover, the QoL questionnaires (C30 and STO22) from the European Organization for Research and Treatment (EORTC) are commonly accepted tools used to quantitatively evaluate postgastrectomy QoL among gastric cancer patients. Compared with many similar studies, using the minimal important difference calculation and adjustments for several clinical confounders should be considered as an improved methodology to facilitate the correct interpretation of results and avoid their misunderstanding or misleading presentation^[3]. However, we believe that one confounder continues to be underestimated or ignored, namely, the laparoscopic procedure. Laparoscopic gastric cancer surgery has gradually become more and more popular in the world, especially for early gastric cancer^[14]. A case-control study compared the QoL of laparoscopy-assisted *vs* open distal gastrectomy for cancer using EORTC questionnaires and had a mean follow-up duration of 20.8 ± 8.9 mo. The results showed that the laparoscopic procedure trended toward better performance regarding reflux and body image at this time point; moreover, it was the same in the stratum for Billroth-II reconstruction (Oxford 2011 level 4 for treatment benefits)^[15]. Therefore, laparoscopic procedures should be considered potential confounders and should be better adjusted for within QoL analyses.

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