The Effectiveness of Billroth-II with Braun Anastomosis in Laparoscopic Distal Gastrectomy for Gastric Cancer

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ABSTRACT

Background: Gastric cancer is a common disease in the world, among the leading digestive cancers. Until now, surgery, especially laparoscopic surgery, is the primary radical treatment. In there, reestablishment of the gastrointestinal continuity remains controversial. This study aims to evaluate the term postoperative complication and short-term outcomes after distal gastrectomy with Billroth II (Poly A) - Braun anastomosis for gastric cancer.

Methods: A prospective study on 42 patients who underwent laparoscopic distal gastrectomy with Billroth II – Braun anastomosis from October 2019 to June 2020. Postoperative complication and short-term outcomes were evaluated.

Results: The post-gastrectomy syndrome with persistent diarrhea accounted for 9.52%; alkaline gastritis accounted for 4.76%. Patients with Grade 2 according to Clavien - Dindo classification accounted for 14.28%. Most patients were with good surgical results of VISICK I (71.44%). 14.28% was with quite good results (VISICK II) and moderate results accounted for 14.28% (VISICK III). There was no case of persistent medical treatment or reoperation.

Conclusion: Billroth II - Braun anastomosis is a good choice in laparoscopic distal gastrectomy for cancer with low rate of complications and mild postoperative symptoms that could be easily controlled with short-term medical treatment.

Key words: Billroth II – Braun, gastric cancer, distal gastrectomy

INTRODUCTION

Gastric cancer is one of the most common digestive cancers around the world. According to GLOBOCAN data, there were more than one million new cases in 2020 and about 769,000 deaths globally (accounting for one in every 13 deaths). Gastric cancer is the 5th rank for incidence and 4th for mortality globally (1).

Until now, surgery for gastric cancer is still a radical treatment if the tumor is resectable, in order to eliminate completely malignant tissues. Gastric cancer prognosis could be significantly improved with early diagnosis and timely treatment.

Surgery for gastric cancer has converted from open to laparoscopy-assistant and complete laparoscopic surgery in the last 20 years (2-4).
Nowadays, laparoscopic gastrectomy has been indicated for early gastric cancer because many studies showed similar results in terms of oncology between open and laparoscopic surgery (5,6).

Along with survival improvement, quality of life gets more attention, laparoscopic surgery becomes more and more popular thanks to its advantages such as reducing traumatic injuries of surgery and pain, low complication rate and short hospital stay (7). Moreover, reestablishment of digestive continuity remains controversial both in open and laparoscopic surgery. There are many reestablishment methods like Billroth I, Billroth II, Roux-en-Y, Billroth II – Braun (8-10). Among them, Billroth II – Braun anastomosis is a choice after distal gastrectomy, however, up to now, there is not any consensus about this issue in Vietnam yet. So, we conducted this study in order to assess the results of Billroth II – Braun anastomosis for reestablishment of digestive continuity after laparoscopic distal gastrectomy for gastric cancer.

PATIENTS AND METHODS

A prospective descriptive study was conducted in 42 patients with gastric cancer who underwent laparoscopic distal gastrectomy with lymphadenectomy and reestablishment of digestive continuity with Billroth II (PolyA) – Braun. The illustrated images of this surgical technique were expressed in figs. 1, 2, 3. All patients were operated by one surgical team at Digestive Surgery Department, Hue Central Hospital from October 2019 to June 2020. Patients were under 6-month follow-up after surgery with clinical assessment and gastroscopy (fig. 4).

The post-operative assessment was to identify Dumping syndrome, alkaline gastritis, afferent loop syndrome, anastomotic ulcer, diarrhea. Assessment results were according to Clavien – Dindo classification (11) (table 1) and Visick grading (12) (table 2).
RESULTS

A total of 42 patients fulfilled the inclusion criteria and agreed to participate in the study. The mean age was 65.1 ± 10.4 years old; the youngest was 46 years old, the oldest was 86 years old. Among them, there were 24 males and 18 females with male/female ratio: 1.33/1. Average BMI was 22.3 ± 3.3. Post-operative clinical symptoms and complications were described in table 3. Among 42 cases of post-operative follow-up, there were 4 patients with persistent diarrhea (9.52%). Besides, 2 cases suffered from alkaline gastritis confirmed by post-operative gastroscopy, accounting for 4.76%.

In post-operative follow-up, there were 6 cases of grade 2 according to Clavien – Dindo classification, accounting for 14.28%. They were above-described patients with post-gastrectomy syndromes.

Thirty patients were with good surgical results (VISICK I) accounting for 71.44%. 6 patients with mild epigastric pain (VISICK II) accounting for 14.28%. 6 patients required pharmacological treatment (VISICK III) accounting for 14.28%. There was no case of longer drug use or reoperation (VISICK IV).

DISCUSSION

The mean age of our research was 65.1 ± 10.4 years old, and male/female ratio was 1.33/1. Compared with the study of Cui et al (2017) (13), there was a similarity with the mean age of 60.1 ± 13.3 and male/female ratio of 15/11 (1.36/1). The average BMI of our study group was 22.3 ± 3.3, similar to the study of In Choi et al (2016) (14) in which the average BMI of 66 patients was 23.5 ± 2.2.

Our study and other authors showed that gastric cancer is a common disease at the age of 60 years old and has a high incidence after 40 years old. In a Japanese study, age over 40 years old is a risk factor that man aging over-40-year-old with symptoms or suspicious symptoms of gastric cancer should undergo upper gastrointestinal endoscopy for screening.

Clinical characteristics and post-gastrectomy syndromes in some studies were listed in table 4.

While compared post-gastrectomy syndromes among domestic and international studies, we found that alkaline gastritis is the most common with a rate from 3 – 16%, followed by diarrhea with the rate of about 9-11%. It showed that the reestablishment of digestive continuity by Billroth II – Braun anastomosis might lead to partial reflux of biliary juice into stomach causing alkaline gastritis. However, among those patients, gastritis and diarrhea were able to be controlled by therapeutic pharmacy in a short time.

It can be seen that the rate of other common post-gastrectomy syndromes was low with Braun anastomosis (1 – 3%). Our hypothesis is Billroth II – Braun anastomosis made it easy for digestive movement to pass over afferent and efferent loops.

Statistical analysis

All data were statistically analyzed using SPSS version 20.0 (SPSS Inc., Chicago, IL, USA). Numeric data are presented as means and standard deviation (SD); qualitative data are expressed as number of events (frequency) and percentage.
to Clavien–Dindo classification (11). In our study, there were 6 patients with grade 2 accounting for 14.28%. This rate was higher than in the study Cui (2017) (13) with grade 1 – 2 according to Clavien – Dindo classification of 7.6%; their grade 3 – 4 accounted for 7.6% while there was no reported case of such grades in this research.

About the result assessment according to Visick, our study showed that Visick I accounted for 71.44%; VISICK II 14.28% and VISICK III 14.28%; no case of VISICK IV. Our study was similar to the study of Parthasarathy (2020); good results accounted for 89.3% (15).

**CONCLUSION**

From this study, we suggested that Billroth II – Braun anastomosis is a good choice for laparoscopic distal gastrectomy with a low post-operative complication rate and moderate postgastrectomy symptom that is able to be controlled by therapeutic pharmacy. However, the study should be continued with bigger data and longer follow-up time.

**Conflict of interest**

All author declare that they have no conflict of interest.

**Ethical approval**

Institutional review board of Hue Central Hospital approved this prospective study. Informed consent of patients was obtained.

**REFERENCES**


**Table 4 - Comparison of post-gastrectomy syndromes**

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<td>Dumping syndrome</td>
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<tr>
<td>Alkaline gastritis</td>
<td>2 (4,76%)</td>
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<td>5 (16,67%)</td>
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<td>Afferent loop syndrome</td>
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<td>1 (3,85%)</td>
<td>1%</td>
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<td>Anastomotic ulcer</td>
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<tr>
<td>Diarrhea</td>
<td>4 (9,52%)</td>
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<td>3 (11,5%)</td>
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