

Gastrosopic Evaluation after Roux-en-Y Gastric Bypass

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Abstract

Original Research Article

Aim: Our study aimed to evaluate the patients underwent Roux en-Y gastric bypass due to morbid obesity in our clinic regardless of whether they were symptomatic or not. Upper- gastrointestinal endoscopy was preferred for this evaluation. **Material and methods:** We retrospectively reviewed the results of endoscopic examination of the patients underwent Roux en-Y gastric bypass due to morbid obesity in our clinic between October 2016 and July 2018. Initial Body Mass Index, Body Mass Index during endoscopy, endoscopy timing, the length of gastric remnant, endoscopic findings, re-weight gain status, weight loss measurements were evaluated. **Results:** Gastrogastric fistula was detected in one of 43 patients included the study. This fistula was revised laparoscopically. Two of the patients had anastomosis ulcer. Anastomosis ulcers were treated with medical treatment and thus complications likely to be in the future were prevented. The incidence of fistula was 2.3% and similar that in the literature. Anastomosis ulcer ratio was 4.6%. **Conclusions:** Performing gastroscopy after gastric bypass may be helpful in the diagnosis of fistulas without symptoms or diagnosis of a marginal ulcer may cause a fistula. Further multicentric studies including much more patients are needed to determine the true incidence.

Keywords: Gastrogastric Fistula, Morbid Obesity, Complication, Gastric Bypass, Gastroscopy.

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INTRODUCTION

Bariatric surgery is the best long-term treatment for morbid obesity treatment. Roux-en-Y gastric Bypass (RYGBP) is a common bariatric surgery that provides long-term weight loss. Various complications can be seen after gastric bypass. Early complications include anastomosis or staple line leakage, gastrointestinal bleeding, intestinal obstruction, and late complications include anastomosis strictures, marginal ulcer, gastrogastric fistula (GGF). GGF is a rare but well-known complication following gastric bypass. The incidence of GGFs after gastric bypass is 1.2-6% [1]. Patients with GGF may be asymptomatic or have nonspecific symptoms such as ulcer formation, weight gain, abdominal pain in the gastrojejunal anastomosis [2]. It is essential to suspect for diagnosis. The diagnosis is confirmed by upper gastrointestinal endoscopy or upper gastrointestinal fluoroscopy. Since the incidence of GGF may be asymptomatic in some patients and sometimes cannot be followed, the incidence is less predicted in the literature.

The aim of this study was to investigate the patients who had laparoscopic Roux en-gastric bypass

(LRYGBP) due to morbid obesity in our clinic, regardless of whether they were symptomatic or not, by upper gastrointestinal endoscopy.

MATERIALS AND METHODS

Endoscopic examination findings of 45 patients underwent RYGBP due to morbid obesity between October 2016 and July 2018, were retrospectively reviewed. All data were obtained from the records of the patients and results of the endoscopy reports. This study has been approved by the appropriate ethics committee and has therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments (Ethics committee approval no; 2019/514/150/6). The demographic characteristics of the patients, initial body mass index (BMI), BMI during endoscopy, time to endoscopy, the length of gastric remnant, endoscopic diagnosis, pathology findings, weight gain status, amount of weight loss during last period were reviewed. Endoscopic measurement of the length of gastric remnant marks distance difference length of from incisor teeth anastomosis line and length from the incisors teeth to gastroözophageal junction. Preoperative

upper gastrointestinal endoscopy was performed routinely. Patients were operated with a technique similar to that described by Schauer *et al.* [3]. All patients were treated laparoscopically, except for one patient. Approximately 20-30 ml pouches were created. The jejunal segment 50 cm distance from the Treitz was anastomosed to gastric pouch, later afferent jejunal segment was separated with linear stapler and side to side anastomosed with jejunal segment 150 cm distance from anastomosis line. Anastomosis leak was controlled by administration of methylene blue Intraoperative, postoperative first and second days. Patients were discharged from the hospital after averagely 4-7 days. Patients were also followed on 1st, 3rd, 4th, 9th, 12th days and later once a six month. Body mass index, waist and hip circumference and laboratory values were evaluated in follow up. Mean follow up times ranged from 6 to 24 months.

RESULTS

Total 43 patients underwent RYGBP included the study. One patient could not be reached. Endoscopy could not be performed in one patient because of being in prison. Outcomes were statistically analysed by using SPSS program. There were 42 female and one male patient. The mean age of the patients was 39 (21-63) years. The mean endoscopy time was 15 months (6-25 months). One patient (2.3%) had gastrogastric fistula in 12th month endoscopy. 2 patients (4.6%) had anastomosis ulcers in postoperative 11 and 12 months gastroscopy. Two patients had millimetric polypoid formations in the stomach. One of them was the patient with ulcer. Biopsy from the polypoid lesions was consistent with benign mucosal polyp. No pathology was found in the endoscopy of the remaining patients. The mean length of gastric remnant at endoscopy was 3.7cm, the lowest was 2 cm, and the longest was 8cm. The mean weight at the 15th month was 44 (26-79) kg. There was no correlation between the remaining stomach length and weight loss. ($p = 0.991$) (Table 1).

Weight gaining again was observed in six (9.2%) of the 43 patients. One of those patients had anastomosis ulcer. Helicobacter pylori was positive in 5 of six patients with weight gaining whereas helicobacter pylori was positive in 15 of 37 patients with no weight gaining ($p=0.05$) Table 2. HP was negative in 23 patients. 20 patients were positive. No relationship was found between HP and weight loss ($p = 0.09$). (Table 3). Pathology result was noted as normal in 11 patients, chronic gastritis in 21 patients and active gastritis in 10 patients. Patients with more weight preoperatively, lost more weight after surgery ($p=0.000$) Table 4. Graphic 1.

DISCUSSION

Gastrogastric fistula is a rare complication after RYGBP. Many studies reported that the incidence of GGF due to RYGBP was 1% [4]. Some studies

reported that more whereas some studies reported less [5,3]. The average incidence is %1-6 [5]. The fistula was 2.3% and the anaastomosis ulcer was 4.6%. There are many factors responsible for GGF that occur after LRYGB. These include iatrogenic (inadequate surgical technique), foreign body (suture migration, stomach band), ischemia (marginal ulcer perforation), stapler line leak and idiopathic causes [6]. Two important reasons for GGF formation are stapler line leakage and abscess formation. Local infection and inflammatory response may cause damage to the stapler lines and fistula formation [7,8]. Preoperative HP infection or nonsteroidal anti-inflammatory drug use may contribute to the development of postoperative marginal ulcers causing GGF [1]. We perform routine endoscopy preoperatively and give medical treatment to HP positive patients. As GGF can be asymptomatic, the actual incidence may be higher than known, since it is only detected in symptomatic patients. In order to increase the incidence rates in the literature, patients who applied with weight loss, marginal ulceration or persistent dyspeptic complaints have endoscopy and radiographic studies. In a retrospective study comprised up 1273 morbid obese patients, the incidence of GGF after RYGBP was 1.18% [9]. However, in our clinic, we routinely perform gastroscopy for patients who have undergone gastric bypass surgery, regardless of their complaints. Thus, we can also detect GGF patients without symptoms. We can prevent the formation of fistula in the future with ulcer treatment by diagnosing the marginal ulcer incidentally detected by chance. Permanent ulceration of the gastrojejunostomy anastomosis is associated with GGF formation, but the definite etiology is still debated [10]. In our study, anastomosis ulcer was detected in two patients (4.6%). Medical treatment of these two patients prevented a possible complication. Permanent ulceration of the gastrojejunostomy anastomosis can be asymptomatic and may show nonspecific symptoms such as nausea, vomiting and abdominal pain. Resistant marginal ulcer, recurrent upper gastrointestinal bleeding, pain, and stenosis can be seen in the presence of all GGF [11].

In our study, GGF was seen in 1 patient of 43 patients (2.3%). Routine endoscopy was planned in this patient and he had nausea and vomiting complaints when he was called for control. GGF was observed in upper gastrointestinal endoscopy. A laparoscopic revision surgery was performed to this patient. Complaints improved after the operation. Recurrence of the diabetes mellitus and weight gaining again may be seen due to the presence gastrogastric fistula. Regaining of the lost weight and failure to achieve optimal weight loss and relaps of the diabetes mellitus occurs when food pass through gastric remnant and jejunum bypassing the duodenum [12]. If the GGF is large enough, the gastric pouch contents may drain into the stomach and disrupt the gastric bypass surgery. As a result, patients can give information about loss of toughness or alleviation of fullness after meals [13] For

these reasons, GGFs can potentially eliminate both the restrictive and malabsorptive components of RYGB. Six out of 43 patients (13.9%) started to gain weight again. Anastomosis ulcer was seen in only one of these 6 patients. The other 5 patients had normal endoscopic findings. When GGFs are rare, the golden rule in diagnosis is suspicion. The gold standard for diagnosis is endoscopic and radiological imaging of the upper gastrointestinal system. CT remnant shows the presence of contrast and air in the stomach. Abdominal CT can detect all GGFs. In our patient with fistula, fistula was diagnosed by CT. Corcelos *et al.* they found that upper gastrointestinal contrast-enhanced imaging for GGF could give 30% false-negative results [14]. Diagnosis timing of GGF changes from one month to 87 months. The most common symptoms of GGF are marginal ulcer and epigastric pain due to weight gaining [15]. In our study, endoscopy was performed at the earliest 6 months and at the latest 25 months. The diagnosis of our patient with fistula was made at 12 months. Upper endoscopy plays a critical role in the treatment of anterior bowel symptoms following RYGB [16]. Endoscopy causes direct visualization of the fistula and the suitability of endoscopy against surgical repair is evaluated [17]. The standard gastroscope is sufficient for diagnosis. A pediatric gastroscope can be used to see small defects [18]. It should be treated with sucralfate and PPI in the presence of marginal ulcers. Conservative treatment aims to reduce gastric acid secretion. This treatment eliminates the symptoms of abdominal pain and reflux, and may lead to the emergence of marginal ulcers or the treatment of ulcers [19]. At the same time, reduction of gastric acid may allow for spontaneous closure of small gastrogastic fistulas [17]. If HP infection is not eradicated after RYGBP, HP should be evaluated and treated. If

gastrojejunal anastomosis ulcers are present, sucralfate should be added for treatment, if patient smoke cigarette it should stopped If decreasing asit may control the GGF symptoms, authors recommended that long term use of proton pump inhibitors as a definitive treatment tool [2]. It is also reported that long-term use of PPI may have potential adverse effects [20].

CONCLUSION

Gastrogastric fistula is rare but potentially important complication seen after RYGB. Symptoms may not be seen in all patients. For this reason, endoscopy may be useful in the diagnosis of asymptomatic fistulas in patients with RYGBP, and in the diagnosis of marginal ulcer which may cause fistula and to prevent possible complications. Further multientric studies with more patients are required to detect the true incidence of GGFs.

Compliance with Ethical Standards

Conflict of Interest

The authors declare that they have no conflict of interest

Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Table-1: The length of gastric remnant and weight loss in passed time

	Mean	Std. Deviation	N
The length of gastric remnant (cm)	3,79	1,094	42
Weight loss till Endoscopy	44,21	12,299	43

Table-2: The relation between the starting weight gaining and Helicobacter Pylori

			Helicobacter Pylori		Total
			positive	negative	
Starting weight gaining	No	Count	22	15	37
		Starting weight gaining(%)	59,5%	40,5%	100,0%
	Yes	Count	1	5	6
		Starting weight gaining(%)	16,7%	83,3%	100,0%
Total	Count		23	20	43
	Starting weight gaining(%)		53,5%	46,5%	100,0%

p=0,05

Table-3: The relationship between Helicobacter pylori (HP) and weight loss

	HP	N	Mean	Std. Deviation	Std. Error Mean
Weight loss in those period	(-)	23	47,17	12,862	2,682
	(+)	20	40,80	10,953	2,449

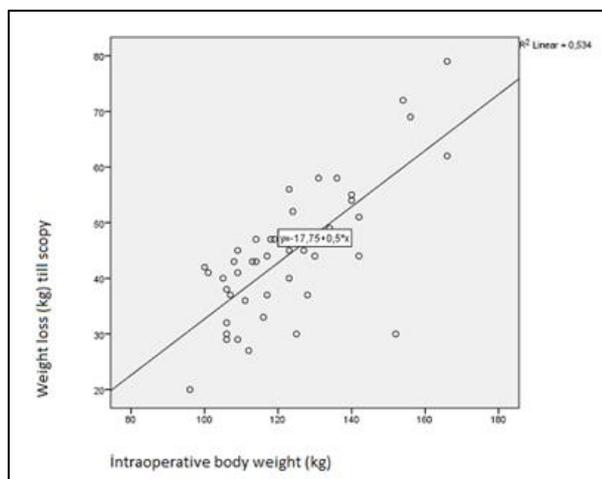
P=0,09 Not; Median Weight loss in patients with HP is 40,80kg,

Median Weight loss in patients without is 47.17kg

Table-4: Intraoperative body weight and weight loss in that period

	Mean	Std. Deviation	N
Weight loss	44,21	12,299	43
Intraoperative body weight	122,81	17,806	43

P=0,000



Graphic-1: The relationship between intraoperative body weight and weight loss till gastroscopy

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