

Research Article:

Prevalence of *Helicobacter pylori* Infection Before and One Year After Classic Gastric Bypass Surgery



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ABSTRACT

Background: This study aimed to evaluate the prevalence rates of *H. pylori* before and one year after Roux-en Y gastric bypass surgery.

Methods and Materials: The laparoscopic research center database from 2018 to 2020 was searched to identify patients undergoing laparoscopic Roux-en Y Gastric Bypass surgery (LRYGB). Retrospectively, the patients were evaluated for the presence of *H. pylori* infection via endoscopy or *H. pylori* stool Ag before and one year after the surgery.

Results: Among the 106 patients, *H. pylori* was positive in 50 patients (47.2%) before the operation. Based on post-op evaluation among 54 patients, only 4(7.4%) developed post-op *H. pylori* infection.

Conclusion: Eradicating *H. pylori* in patients under Roux-en Y gastric bypass surgery remains efficient. So, it is not recommended to recheck *H. pylori*-Ag in patients after LRYGB in the short term. However, we suggest that further studies evaluate the need for long-term re-screening patients for *H. pylori*-Ag after LRYGB.

1. Introduction

As a universal pathogen, *Helicobacter pylori* (*H. pylori*) has infected nearly 50% of the world's population [1]. Although there has always been uncertainty in the correlation of *H. pylori* infection with obesity [2], some studies believe that infection with this patho-

gen will increase the risk of obesity (BMI>30 kg/m²), especially in patients less than 50 years old [3].

Morbid obesity, as a life-threatening phenotype of obesity, is also a growing universal problem related to the poor nutritional regimen and low socioeconomic condition [4]. So far, bariatric surgery is the only effective therapy for this prevalent clinical problem [5]. The laparoscopic Roux-en Y Gastric Bypass Surgery (LRYGB) or classic

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gastric bypass is classified as a combined restrictive and malabsorptive bariatric surgery. In this bypass, by stapling the majority of the stomach, the patient is left with a small stomach. Morbid obese patients undergoing classic gastric bypass surgery have a remnant stomach that will be inaccessible in the event of gastrointestinal complaints and endoscopic evaluation. So, it makes it challenging to examine patients' stomach tissue more closely [5].

According to some evidence, a high rate of *H. pylori* infection is seen among patients for whom pre-bariatric surgery endoscopic evaluation was done [6, 7]. *H. pylori* is known as a class 1 carcinogen and one of the most common human pathogens. The eradication of *H. pylori* before bariatric surgery has been suggested for several reasons. As mentioned above, *H. pylori* is one of the carcinogens, and on the other hand, this infection may even be present in the remaining parts of the stomach after surgery. As a result, there is a chance of developing dyspepsia symptoms and diseases such as stomach ulcers and cancers [8, 9].

According to the literature, no study has been done on the prevalence of *H. pylori* after the classic gastric bypass surgery in these patients. So, in this study, we try to evaluate the prevalence of *H. pylori* before and one year after classic gastric bypass surgery and the association of this infection with gallstone formation.

2. Materials and Methods

Study participants

The study population includes patients with obesity referring to the obesity clinic, who underwent classic gastric bypass surgery at least one year ago. The census counting method was used to determine the sample size. This study was performed in a retrospective cohort manner. Initially, the patients were selected that had a BMI above 40 or 35 kg/m². Also, they had underlying diseases associated with obesity who underwent obesity surgery and were enrolled in the database of the Obesity Center of the Maternal and Child Hospital. The inclusion criteria consisted of patients with a BMI of above 40 kg/m² or higher than 35 kg/m² along with other high-risk conditions, including severe sleep apnea, cardiovascular disease, or diabetes. Informed consent has been obtained from the patients regarding the publication of this study. The study was conducted in adherence to the Declaration of Helsinki.

Data collection

This study was conducted after obtaining permission from the University of Medical Sciences. In the initial stage of the study, a general profile questionnaire, including age, sex, physical activity, smoking, dietary supplements and medications, weight loss regimen, medical history and duration of the disease, and questions about the use of medications were obtained to check the inclusion and exclusion criteria. Before surgery, endoscopy was performed on all patients who were candidates for obesity, and a biopsy of the stomach was obtained to check whether *H. pylori* is positive or negative. If the sample sent from the patient is positive, *H. pylori* eradication treatment would be started. In the first line, we used a standard 3-drug therapy. After completing the treatment period, a stool Ag test was performed two weeks later to ensure that *H. pylori* was negative before surgery. In case of resistant infection, a 4-drug regime would be prescribed. All data related to this process (12 months after surgery) were recorded in the database of Ghadir Mother and Child Hospital, Shiraz, Iran, and extracted for this research. Next, we contacted these patients who had operated on about one year later, and while following the patient's condition, a request for re-testing *H. pylori* stool Ag was asked from the patients, which their results were recorded.

Statistical analysis

Data were recorded and transferred to SPSS v. 17 and subsequently analyzed. Descriptive values were reported as Mean±SD along with their frequency. Qualitative variables are analyzed using the Chi-square test. P values less than 0.05 are considered statistically significant.

3. Results

Based on hospital records, a total of 172 patients were contacted for evaluation. Among them, only 106(61.6%) responded, but only 54(31.4%) performed post-operative *H. pylori* stool test. The Mean±SD pre-operative weight of the participants was 125±18.38 kg, while their current weight Mean±SD was 79.81±15.08 kg one year after the surgery. Based on the pre-operative evaluation, *H. pylori* was positive in 50(47.2%) out of 106 patients based on a biopsy taken through endoscopy.

Among 54 patients who performed the post-operative stool Ag test for *H. pylori*, based on pre-op evaluation, 27(50%) had positive results. It is worth mentioning that all of these patients had received treatment for eradication and all of them had negative stool Ag test for *H. pylori* before the surgery. However, post-operative *H. pylori* evaluation demonstrated a recurrence in 4(7.4%) of the patients.

4. Discussion

As more and more morbidly obese patients undergo bariatric surgeries to lose their weight, it is more important to investigate the causes of possible complications. *H. pylori*-related complications such as gastric mucosal inflammation, edema secondary to *H. pylori* infection, and also altered metabolic responses have been found to exist in this field [10, 11].

H. pylori eradication can reduce post-operative complications in patients who have undergone bariatric surgeries [12]. Besides, due to the high incidence of lesions and foregut symptoms in patients with non-eradicated *H. pylori* infection and inaccessible endoscopic evaluation in the remnant stomach (although only 7.4% of our patients showing *H. pylori*-Ag in post-operative evaluation), the necessity of performing *H. pylori* eradication before classic gastric bypass surgery remains necessary.

According to the low level of recurrence of *H. pylori* (7.4% of 54 patients have positive *H. pylori*-Ag test), at least one year after classic gastric bypass surgery, there is no need to recheck *H. pylori*-Ag in patients after classic gastric bypass surgery in the short term. On the other hand, further studies are recommended to evaluate the need for long-term re-screening patients for *H. pylori*-Ag after surgery. Nevertheless, due to the limited data available in our study and the absence of proper patient follow-up, it is recommended to conduct additional research in this area to validate further the findings presented in this paper.

5. Conclusion

The procedure of eradicating *H. pylori* in candidates for classic gastric bypass surgery remains efficient. So, it is not recommended to recheck *H. pylori*-Ag in patients after classic gastric bypass surgery in the short term. However, further studies are suggested to evaluate the need for re-screening patients for *H. pylori*-Ag in the long term after classic gastric bypass surgery.

Ethical Considerations

Compliance with ethical guidelines

The study was approved by the Ethics Committee of the Shiraz University of Medical Sciences (Code: IR.sums.med.rec.1399.497). All ethical principles are considered in this article. The participants were informed about the purpose of the research and its implementation stages. They were also assured about the confidentiality of their infor-

mation. They were free to leave the study whenever they wished, and if desired, the research results would be available to them.

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Authors' contributions

Conceptualization and supervision: Nader Moeinvaziri, Sadra Valiei, and Neda Haghighat; Methodology: Neda Haghighat, Masoud Amini; Investigation, writing – original draft, and writing – review & editing: Sadra Valiei, Hamidreza Hosseinpour, Reza Shahriarirad, Ali Shahabinezhad; Data collection: Hamidreza Hosseinpour, Reza Shahriarirad, Sepehr Shahriarirad, Ali Shahabinezhad, Babak Hossini; Data analysis: Neda Haghighat, Sadra Valiei; Funding acquisition and resources: Masoud Amini, Nader Moeinvaziri, and Neda Haghighat.

Conflict of interest

The authors declared no conflict of interest.

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