



CLINICAL PRESENTATION, POSTOPERATIVE COMPLICATIONS AND RISK FACTORS OF DUODENAL LEAKAGE AFTER GRAHAM OMENTOPEXY FOR DUODENAL ULCER PERFORATION DUODENAL ULCER

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ABSTRACT

Background: Perforations in the duodenum are a common surgical emergency that carry a high risk of morbidity and death. Helicobacter pylori infection is the main cause of duodenal ulcers, yet long-term use of non-steroidal anti-inflammatory medicines (NSAIDs) can also contribute to the formation of ulcers. The standard treatment for duodenal ulcer perforation is Graham omentopexy. However, 9% of patients experience leakage following this treatment, which has a 44.4% fatality rate.

Objective: To examine the clinical symptoms at presentation, postoperative complications, and risk factors linked with duodenal leakage after Graham omentopexy for perforated duodenal ulcer.

Study design: cross sectional study

Place and Duration: This study was conducted in Liaquat University Hospital Hyderabad/Jamshoro from January 2023 to January 2024

Methodology: Purposive sampling with non-probability technique was used. All patients, regardless of gender, who received emergency surgery for duodenal perforation over the age of twelve years were included in the study. A thorough history and physical examination were performed, and vital signs as well as information regarding duration of symptoms prior to presentation were gathered using a premade form.

Results: There were a total of 80 participants of this study. Majority of them were males. All of the participants were aged between 12 to 65 years. The average age calculated was 28.4 years. PT/INR

was deranged in 16 (20%) patients. Majority of the participants presented within 24 hours of onset symptoms. Serum albumin levels were low in six (7.5%) patients. Serum creatinine was elevated in 15 (18.75%) individuals. During the exploration, over 1000 cc of contaminated peritoneal fluid was evacuated from 16 (20%) patients.

Conclusion: In summary, wound infection, paralytic ileus, anastomotic leakage, ruptured abdomen, and respiratory failure are frequent complications that follow Graham omentopexy.

Keywords: Graham omentopexy, duodenal rupture, complications, anastomotic leakage

INTRODUCTION

Perforations in the duodenum are a common surgical emergency that carry a high risk of morbidity and death [1]. Helicobacter pylori infection is the main cause of duodenal ulcers, yet long-term use of non-steroidal anti-inflammatory medicines (NSAIDs) can also contribute to the formation of ulcers [2]. Betel nut use, low socioeconomic status, smoking, alcohol drinking, and using steroids are other risk factors [3]. The standard treatment for duodenal ulcer perforation is Graham omentopexy [4]. However, 9% of patients experience leakage following this treatment, which has a 44.4% fatality rate [5]. Patients who seek treatment more than three days after the onset of symptoms are more likely to experience leakage, which is frequently accompanied by further problems [6]. During the Islamic month of Ramadan, there is an increased incidence and risk of complications related to duodenal perforation [7]. Proton pump inhibitor are advised as a postoperative treatment to prevent the relapse [8, 9, 10].

In patients with duodenal ulcer perforation, this study sought to examine the clinical presentation, metabolic profile, postoperative sequelae, and risk factors for leakage after Graham omentopexy. Finding patients who needed close observation and intense care during their hospital stay was the aim. The study also supports long-term family counseling and emphasizes the value of continuing care.

METHODOLOGY

The Institutional review board approved this study. Purposive sampling with non-probability technique was used in this study. All patients, regardless of gender, who received emergency surgery for duodenal perforation over the age of twelve years were included in the study. We acquired informed consent from each individual.

Exclusion criteria: Patients with ileal perforation or any other condition were not allowed to continue in the trial when they were examined further.

A thorough history and physical examination were performed, and vital signs (respiration rate, blood pressure, and heart rate) as well as information on the length of symptoms prior to presentation were gathered using a premade form. Serum albumin, prothrombin time, liver function tests, serum creatinine, and international normalized ratio (INR) were among the laboratory tests performed. Following resuscitation, all patients had Graham omentopexy and an emergency exploratory laparotomy. Operative results were recorded, including the size and location of the perforation as well as the type and composition of the peritoneal fluid. Postoperative tachycardia, tachypnea, and hypotension were risk factors for leakage. Leakage, respiratory failure, wound infection, re-exploration, abdominal rupture, and interloop abscess were among the complications that were reported. Pyloric exclusion, tube duodenostomy, and gastrojejunostomy were used to manage leakage, and patients received complete parenteral nutrition as necessary. Mortality rates and results were noted.

SPSS version 23 was used to establish a database. The results of complications were displayed as percentages and frequencies. For each proportion, a 95% confidence interval was computed, and the binomial proportion was evaluated against the null hypothesis using a one-sample t-test. If $p < 0.05$, the results were considered significant.

RESULTS

There were a total of 80 participants of this study. Majority of them were males. All of the participants were aged between 12 to 65 years. The average age calculated was 28.4 years. PT/INR was deranged in 16 (20%) patients. Table number 1 shows the distribution of participants according to gender.

Table No. 1: distribution of participants according to gender. (n=80)

Gender	n	%
Male	75	93.75
Female	5	6.25

Majority of the participants presented within 24 hours of onset symptoms. Table number 2 shows this distribution.

Table No. 2: Distribution of symptoms

Time of presentation according to symptoms	n	%
<24 hours of onset symptoms	30	37.5
<48 hours of onset symptoms	28	28.0
>48 hours of onset symptoms	22	34.5

Serum albumin levels were low in six (7.5%) patients. Serum creatinine was elevated in 15 (18.75%) individuals. During the exploration, over 1000 cc of contaminated peritoneal fluid was evacuated from 16 (20%) patients. All individuals developed holes on the duodenum's anterior wall. In 20 (25%) patients, the perforation measured more than 1 cm. There were a total of 46 participants who had postoperative complications after graham omentopexy. Table number 3 shows the postoperative complications after graham omentopexy.

Table No. 3: postoperative complications after graham omentopexy

Postoperative Complications	n	%
Burst abdomen	2	2.5
Paralytic ileus	6	7.5
Wound infection	15	18.75
Mortality after Graham omentopexy	7	8.75
Leakage	13	16.25
Respiratory failure	3	3.75

DISCUSSION

A serious consequence that requires surgery is the perforation of a duodenal peptic ulcer [11, 12]. In order to heal the illness and prevent recurrence, medical intervention is also necessary. Dyspepsia is one of the symptoms that could point to a peptic ulcer, which needs to be validated by upper GI endoscopy. Notably, our study found that males with a median age of 28 years had a higher frequency

of perforation [13]. This implies that they might have been exposed to more food tainted with *Helicobacter pylori*, the bacteria that causes duodenal ulcers most frequently.

An emergency setting's clinical presentation has a major impact on how well Graham omentopexy works [14, 15]. In a different trial, 75% of patients showed up after a 24-hour period, and 73% of them had systolic blood pressure readings higher than 100 mm Hg [16]. In another study, the rate of postoperative complications was 28.3%. Twenty (27.77%) patients with a complication rate of 22.22% in our study arrived at the ER 48 hours later [16]. A total of 56.3% of patients came in the ER after 24 hours, according to another study.

Our investigation indicates that the most common type of perforation is duodenal, which largely affects the front surface of the first half of the duodenum, rather than gastric. Graham omentopexy, first described by Graham in 1937, is the standard treatment. We used this procedure for every patient, with largely positive results. On the other hand, those with multiple risk factors detected at presentation and throughout hospitalization through clinical and biochemical profiles showed leakage of the repair. Presentation that was delayed by 24 hours was very important. According to another study, the mortality rate was as high as 60%, and almost half of the patients had sepsis at the time of presentation and 25% had proceeded to septic shock [17].

Significant problems include burst abdomen, intra-abdominal collections, leakage, wound infection, and respiratory failure [18]. These complications are most commonly caused by large perforation size, advanced age, and shock at presentation. Similar results were seen in our trial, with 3 patients experiencing respiratory failure and 13 patients reporting leakage. Upper abdominal pain that quickly extends across the abdomen is the initial symptom of duodenal perforation, which frequently happens at night [19, 20]. Patients usually show widespread abdominal tenderness when examined. Free gas under the diaphragm is frequently visible on X-rays abdomen. Sadly, a large number of patients do not receive quick referrals to surgeons for the most effective care, which raises morbidity and mortality rates. Notably, no patient in our study died at the time of their first presentation; instead, all deaths happened to patients who experienced leakage after Graham omentopexy.

CONCLUSION

In summary, wound infection, paralytic ileus, anastomotic leakage, ruptured abdomen, and respiratory failure are frequent complications that follow Graham omentopexy. Delayed presentation, age over 50 years, large perforation size, intra-abdominal infection, and aberrant metabolic profiles are risk factors that predispose to leaking.

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Conflict in the interest

The authors had no conflict related to the interest in the execution of this study.

Permission

Prior to initiating the study, approval from the ethical committee was obtained to ensure adherence to ethical standards and guidelines.

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