

Prospective Study Comparing Graham's Omental Patch with Modified Graham's Patch in the Management of Perforated Duodenal Ulcer

Partha Pratim Deb^{1*}, Amarendra Nath Sarkar²¹RMO cum clinical tutor, Department of General surgery, North Bengal medical college, Darjeeling, India²Associate Professor, Department of General surgery, North Bengal medical college, Darjeeling, India

*Corresponding author: Partha Pratim Deb

| Received: 18.03.2019 | Accepted: 27.03.2019 | Published: 30.03.2019

DOI: [10.36347/sjams.2019.v07i03.089](https://doi.org/10.36347/sjams.2019.v07i03.089)

Abstract

Original Research Article

Peptic ulcer perforation is a surgical emergency and it can affect 2-10% of patients with peptic ulcer disease (PUD). It can present with an overall mortality of 10%. The treatment options are omental patch repair by either Graham's technique or modified Graham's technique. The objective of our study was to compare the outcome of Graham's omental repair with that of modified Graham's omental repair in the treatment of perforated duodenal ulcer. A total of 60 patients coming to our outdoor in the study period from February, 2018 to January, 2019 were included. Patients were randomly allocated into two groups, the first consisting of those in whom Graham's omental patch (GOP) was done whereas the second had undergone modified Graham's omental patch (MGOP). The mean operative time, postoperative complications, mean hospital stay were similar in both the groups. We conclude that GOP is similar in efficacy to MGOP as far as morbidity and mortality is concerned.

Key words: Peptic, perforation, Graham's, technique, omental.

Copyright © 2019: This is an open-access article distributed under the terms of the Creative Commons Attribution license which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use (NonCommercial, or CC-BY-NC) provided the original author and source are credited.

INTRODUCTION

Peptic ulcer perforation is a surgical emergency which can affect 2-10% of patients with peptic ulcer disease (PUD). It can present with an overall mortality of 10%, although the incidence may vary among various authors ranging from 1.3-20%. Hence, selection of most suitable surgical approach is an important issue for surgeons [1].

Approximately 20-25% of patients with PUD become complicated with bleeding, perforation or obstruction. Majority of patients with complicated ulcers are infected with helicobacter pylori but it is observed that the prevalence of infection is lower in these patients compared to those with uncomplicated ulcers [2]. Management of PUD has improved significantly following introduction of proton pump inhibitors and helicobacter pylori eradication therapy. It is now obvious that an overall imbalance between protective and ulcerogenic factors is responsible for ulcer formation although it is not clear why some patients perforate and others do not [3]. Only about one third of patients with perforation have a previous history of PUD at the time of diagnosis. Roscoe Graham described a method of surgical closure of peptic ulcer perforation in 1937 and it is widely accepted till date. In this method, after exploratory laparotomy the site of perforation is identified and

thorough wash is given with normal saline. Then the omental tongue is brought into the position and fixed with three or four nonabsorbable sutures. During closure, care is taken not to incorporate the sutures into posterior wall of the duodenum. The tension applied to the tied suture on the omentum should not jeopardize the blood supply of omentum [4]. This method was later modified and was known as modified Graham's patch repair in which three or four nonabsorbable sutures are taken and tied before fixing omental patch over it. The main concern in this method is that the omentum will not seal the perforation as good as the previous method [5].

The aim of the study was to compare the outcome of Graham's omental patch (GOP) with that of the modified Graham's omental patch (MGOP) in the treatment of perforated duodenal ulcer.

MATERIALS AND METHODS

A prospective observational study was conducted in the department of general surgery of our institute from February 2018 to January 2019. Approval was taken from the ethical committee of the institute. All the patients of duodenal ulcer perforation attending our emergency were included in the study except large perforations of more than 2 cm in diameter and sealed perforation cases. A total of 60 patients were included

in the study and they were randomly selected & distributed into two groups, each consisting of 30 patients. Group I patients underwent GOP repair (figure 1) whereas in group II patients, MGOP repair was performed (figure 2). The data was collected in a specified proforma and statistical analysis of the data was performed using fisher's exact test and chi square

test. The comparison between the two groups was done in terms of mean operative time, development of wound infection, bile leak, burst abdomen, pneumonia, intraabdominal abscess, and duration of hospital stay, requirement of reexploration and postoperative mortality within 30 days.

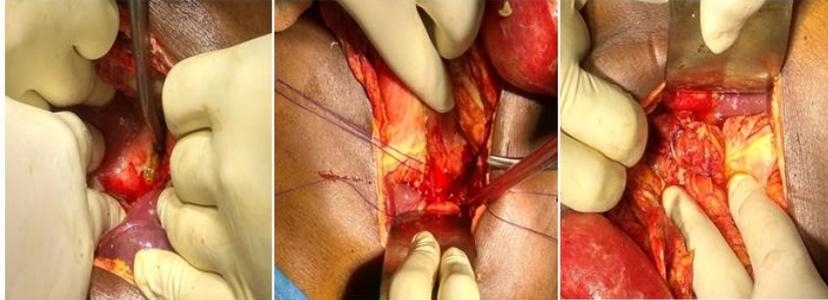


Fig-1: Showing the steps of GOP in group I patients a) identification of duodenal perforation, b) placement of three absorbable sutures and c) fixing of omental tongue by the absorbable sutures



Fig-2: showing the steps of MGOP in group II patients a) identification of duodenal perforation, b) placement of three absorbable sutures, c) tying of the sutures, d) fixing of omental tongue over the tied sutures

RESULTS

A total of 60 patients with age ranging from below 15 to 69 years were enrolled for the study. Most of them belonged to the age group of 35-49 years (48.3%) and only one patient was above the age of 65 years. None of the patients were below 15 years of age. Among the 60 patients of the study, majority 58 (96.7%) were male and only 2 (3.3%) were female. Most of the duodenal ulcer perforations were having a diameter of 0.6-1cm (65%) range and rest of them were smaller than 1 cm in size. In our study, 70% of the

patients presented to our emergency after 24 hours of onset of symptoms while rest of them presented earlier.

The postoperative complications found in the group I patients were surgical site infection (SSI) in 7 (23.33%), bile leak in one (3.33%), burst abdomen in 2 (6.67%), pneumonia in 3 (10%), death in 2 (6.67%) patients and no patient had intraabdominal abscess whereas in group II patients, SSI was noted in 6 (20%) cases, bile leak in 2 (6.67%) cases, burst abdomen in one (3.33%) case, pneumonia in one (3.33%) case, one intraabdominal abscess and one death (3.33%) as shown in the table 2.

Table-1: Analysis of data in duodenal ulcer patients

Factors	divisions	N (%)
Age of the patients(years)	<20	4(6.7)
	20-34	11(18.3)
	35-49	29(48.3)
	50-64	15(25)
	>65	1(1.7)
Sex	Male	58(96.7)
	female	2(3.3)
Time interval between onset of symptoms and surgery(hours)	<24	18(30)
	>24	42(70)
Size of duodenal ulcer perforation(cm)	<0.5	6(10)
	0.6-1	39(65)
	>1	15(25)

Table-2: Outcome of surgeries performed

Outcomes	Graham's patch repair N=30(%)	Modified Graham's patch repair, N=30(%)	P value
Mean operative time(min)	74.2±7.53	75.8±8.32	0.438
SSI	7(23.33)	6(20)	0.5
Postoperative bile leak	1(3.33)	2(6.67)	0.5
Burst abdomen	2(6.67)	1(3.33)	0.5
Pneumonia	3(10)	1(3.33)	0.3
Intraabdominal abscess	0	1(3.33)	0.5
Mean hospital stay(days)	10.5±1.89	9.3±1.62	0.011
Reexploration	1(3.33)	2(6.67)	
Death	2(6.67)	1(3.33)	

DISCUSSION

In the duodenal perforation patients who present with unstable haemodynamics and extensive peritoneal contamination, it is customary to close the perforation with Graham's omental patch [6]. In modified-Graham's technique, a part of omentum is brought to the top of the already approximated perforation with second level of absorbable sutures. It not only reduces the risk of cutting through the sutures used for closure of perforation but also induces neovascularization, which accelerates healing of the ulcer [7].

Graham's concluded in his study that routine gastroenterostomy was not necessary for the treatment of perforated duodenal ulcer and that omental patch was sufficient for closure of these cases. In the treatment of perforated duodenal ulcer, a minimum of two principles are required to be maintained: one to ensure adequate closure of perforation and the other to control production of acid. He also mentioned that acid-reducing procedures like vagotomy and gastrojejunostomy/pyloroplasty in the emergency setting is never safe. In such situation, it is more prudent to control acid production with proton pump inhibitors [8].

The incidence of SSI was comparable in the two groups, 7 patients in GOP group and 6 patients in the MGOP group. Burst abdomen, pneumonia and Mortality rates were higher in the GOP group but

postoperative bile leak, intraabdominal abscess and reexploration rates were higher in the MGOP group. Releaking is probably due to incomplete and insecure sealing of the perforation by omentum. Postoperative SSI was the major complication seen in these patients and ranged from 20-23.33% which is comparable to few studies [9].

Previously published trials were not clear as to whether MGOP is better or worse than GOP [10]. In the present study the mortality rate ranged from 3.33-6.67% which is comparable to other literatures where the range was from 6.5-20% [11]. In our study the mean hospital stay was 10.5 days in GOP group and 9.3 days in the MGOP group which is similar to other study [10].

Many surgeons have expressed their feelings that if patients could be brought to hospital earlier in the course of their attacks, the morbidity and mortality might be substantially reduced. The most important factors affecting the outcome of treatment are delay in admission to the hospital, concomitant diseases, and preoperative shock. This necessitates early admission, adequate resuscitation, and treatment of concomitant diseases and early surgery [12].

Our study may not be statistically significant due to the small sample size; further studies with more number of cases are required to evaluate the more suitable procedure for the treatment of these cases.

CONCLUSION

The analysis of our study shows that Graham's omental patch is similar in efficacy to modified Graham's omental patch as far as morbidity and mortality is concerned. The choice between GOP or MGOP depends upon surgeon's preference as there is no statistically significant difference between the two procedures.

REFERENCES

1. Kidwai R, Ansari MA. Graham patch versus modified graham patch in the management of perforated duodenal ulcer. *Journal of Nepalgunj Medical College*. 2015;13(1):28-31.
2. Laine LA. Helicobacter pylori and complicated ulcer disease. *The American journal of medicine*. 1996 May 20;100:52S-9S.
3. Sung JJ, Kuipers EJ, El-Serag HB. Systematic review: the global incidence and prevalence of peptic ulcer disease. *Alimentary pharmacology & therapeutics*. 2009 May;29(9):938-46.
4. Horowitz J, Kukora JS, Ritchie WP, Jr All perforated ulcers are not alike. *Ann Surg*.1989; 209(6):693-6. discussion 696-7
5. Graham RR. The treatment of perforated duodenal ulcers. *Surg Gynecol Obstet*. 1937; 64:235-8.
6. Ohene-Yeboah M, Togbe B. Perforated gastric and duodenal ulcers in an urban African population. *West Afr J Med*. 2006; 25:205-211.
7. Arveen S, Jagdish S, Kadambari D. Perforated peptic ulcer in South India: an institutional perspective. *World journal of surgery*. 2009 Aug 1;33(8):1600-4.
8. Nuhu A, Madziga AG, Gali BM. Acute perforated duodenal ulcer in Maiduguri. *West Afr J Med*. 2009; 21:1.
9. Rajput IA, Iqbal M, Manzar S. Comparison of omentopexy techniques for duodenal perforation. *Pak J Surg*. 2000;16:1-6.
10. Budzyński P, Pędziwiatr M, Grzesiak-Kuik A, Natkaniec M, Major P, Matłok M, Stanek M, Wierdak M, Migaczewski M, Pisarska M, Budzyński A. Changing patterns in the surgical treatment of perforated duodenal ulcer—single centre experience. *Videosurgery and Other Miniinvasive Techniques*. 2015 Sep;10(3):430.
11. Kumar K, Pai D, Srinivasan K, Jagdish S, Ananthkrishnan N. Factors contributing to re-leak after surgical closure of perforated duodenal ulcer by Graham's Patch. *Tropical gastroenterology: official journal of the Digestive Diseases Foundation*. 2002;23(4):190-2.
12. Jat MA. Comparative Evaluation of Graham's Omentopexy versus Modified Graham's Omentopexy in Perforated Duodenal Ulcers. *Annals of King Edward Medical University*. 2016 Sep 9;22(3).