

The results of perforated peptic ulcer surgery; A single center experience of 86 patients

Volkan Oter¹, Metin Yalcin², Mehmet Tolga Kafadar², Serdar Oter³

¹Sakarya University, Faculty of Medicine, Department of Department of Gastroenterological Surgery, Sakarya, Turkey

²Health Sciences University, Mehmet Akif Inan Training and Research Hospital, Department of General Surgery, Sanliurfa, Turkey

³Mersin University Faculty of Medicine, Department of Gastroenterological Surgery, Mersin Turkey

Copyright © 2018 by authors and Annals of Medical Research Publishing Inc.

Abstract

Aim: At the present time, eradication of the *Helicobacter pylori* infection is dramatically reduced the risk of the peptic ulcer disease. Whereas, complication rate of the peptic ulcer, such as perforations or bleedings have not been reduced significantly yet. The aim of the current study is to analyze the surgical treatment outcomes of our experiences in 86 patients with peptic ulcer perforation.

Material and Methods: Between January 2012 and December 2017, 86 patients who were operated emergently for perforated peptic ulcer disease with Graham's omental patch procedure in our hospital were included in this study. Demographic, clinical data, diagnostic studies, surgical procedures, operative findings, postoperative complications and patient follow-up were analyzed.

Results: The mean age was 41.57±16.09 years. Out of 86 cases there were 65 (75.6%) male patients and 21 (24.4%) female patients. The mean operation time was 66.98±18.61 minutes. The mean hospital stay period was 7.95±2.02. In three months of follow-up period, endoscopy was done to all of these patients and peptic ulcer disease was not seen in any of them.

Conclusion: Our findings revealed that Graham's omental patch repair is still a useful method for perforated peptic ulcer disease. Low complication rates, low duration of hospital stay and also low postoperative morbidity can be achieved with good preoperative and postoperative supportive care in open surgery for peptic ulcer perforation. Laparoscopic surgery should be performed only in the presence of experienced surgeon and also in the presence of sufficient laparoscopic materials.

Keywords: Perforated Peptic ulcer; Surgery; Graham's Omental Patch.

INTRODUCTION

At the present time, eradication of the *Helicobacter pylori* infection and the widespread use of proton pump inhibitors (PPI) are dramatically reduced the risk of the peptic ulcer disease (1,2). Whereas, complication rate of the peptic ulcer, such as perforations or bleedings have not reduced significantly yet (3,4). Peptic ulcer perforation (PUP) is a life-threatening complication and should be implemented emergency surgical intervention. (5,6). Patients with PUP often admit to the emergency units with acute abdomen syndrome with a high risk of morbidity and mortality (7). Treatment options about this complication are ranging from non-operative therapy to operative procedures (5). The operation has been traditionally performed through a midline laparotomy; however laparoscopic interventions are presently used by experienced surgeons. Conservative approach has a limited part in treatment of the perforation. (8). Previous studies have recommended that exploratory laparotomy should be performed if peritonitis findings

are present (9). The most preferred surgical procedure in PUP patients with peritoneal contamination and haemodynamic instability is a suture closure with a Graham's omental patch (10,11).

The aim of the current study is to analysis the demographic characteristics and surgical treatment outcomes of our experience in 86 patients with PUP.

MATERIALS AND METHODS

After approval of local ethical committee, we recorded the data included prospectively in the database of patients who operated for peptic ulcer perforation. Between January 2012 and December 2017, 86 patients were operated emergently and Graham's omental patch procedure was performed for perforated peptic ulcer in Sanliurfa Mehmet Akif Inan Training and Research Hospital. Demographic, clinical data, diagnostic studies, surgical procedures, operative findings, postoperative complications, and patient follow-up were retrospectively analyzed.

Received: 29.01.2018 **Accepted:** 20.02.2018 **Available online:** 27.02.2018

Corresponding Author: Volkan Oter, Sakarya University, Faculty of Medicine, Department of Department of Gastroenterological Surgery, Sakarya, Turkey, E-mail: otervolkan@gmail.com

A detailed previous history was taken in all patients. The co-morbid conditions and risk factors for peptic ulcer disease were also taken. Hematological and biochemical blood tests were taken. X-ray abdomen in standing was done for all patients. Abdominal computed tomography was used for only suspected diagnosed.

Operative Procedures

An upper midline incision was used to perform the operation under general anesthesia. The Graham's omental patch has been performed in all patients. 2/0 or 3/0 Vicryl sutures are used between sides of the perforation area and tied to close the perforation area. A pedicle of omentum is placed between the sutures on two sides and sutures are tied again to complete the procedure. All of the perforation areas were closed by sutures and later an omentoplasty was added.

Inclusion criteria

Patients who were operated emergently for perforated peptic ulcer disease with Graham's omental patch procedure were included.

Exclusion criteria

Multiple or delayed peptic ulcer perforations (past 48 hours), traumatic ulcer perforations and patients who died in the early postoperative period due to severe comorbid disease were excluded from the study.

Statistical Analysis

SPSS for Windows programmed was used to perform the data analysis, (version 16.0, Chicago, IL, USA). Fisher's exact test or Pearson Chi Square test was used to compare the categorical variables. Then Student t test or the Wilcoxon rank test was used for continuous variables.

RESULTS

Patient characteristics

Perforated peptic ulcer surgery was performed to 86 patients in our department between January 2012 and December 2017. The mean age was (41.57 ± 16.09) years. Out of 86 cases there were 65 (75.6%) male patients and 21 (24.4%) female patients. Demographic and clinical features are shown in Table 1.

Table 1. Demographic and clinical characteristics of the patients	
Parameters	(n=86)
Mean age ± SD years	41.57 ± 16.09
Gender (mean, %)	
Male (n,%)	65 (75.6%)
Female (n,%)	21 (24.4%)
Mean perop. blood loss (ml)	83.95±42.09
Mean operation time (minute)	66.98±18.61
ICU (%)	9 (10.4%)
Surgical complication (%)	8 (9.3%)
Hospital stay ± SD days	7.95 ± 2.02

ICU: intensive care unit

These patients presented with history of acute abdominal pain. Only a few amounts of patients have either past peptic ulcer disease history. The 45 male and 11 female patients had alcohol or smoking history with rare use of anti-inflammatory drugs. The remaining thirty patients haven't declared a history of any addiction. Additionally, 8 female and 3 male patients had a history of anti-inflammatory or oral steroid drugs use. The rest of 57 female and 18 male patients had no history of these. The X-ray abdomen in standing showed free gas under diaphragm in 84 patients (Figure 1). In 2 patients, no free gas was seen under diaphragm. These two patients were diagnosed during the operation. Crystalloid solutions were used for preoperative resuscitation of the patients. The hemodynamic stability was achieved in all of these patients.



Figure 1. Abdominal plain X-ray revealed a free air in the peritoneal cavity

Surgical outcomes

All patients underwent to exploratory laparotomy and Graham's omental patch repair procedure was performed under general anesthesia. Three sutures were placed in the perforated area in all patients. The mean operation time was 66.98±18.61 minutes.

Post-operative outcomes and follow-up

Postoperative hospital stay period in all these patients was uneventful. Wound infection complication seen in 8 patients who treated with systemic oral or intravenous antibiotics and closed dressings. The period of hospital stay ranged from 5 days to 14 days. After the procedure performed, antibiotic treatment was given for 4-7 days to the patients. After postoperative hospital period, two weeks of anti-microbial therapy was given to the patients for Helicobacter pylori eradication. In three months follow-up period, endoscopy was done to all of these patients and peptic ulcer disease was not seen in any of them. There was no mortality in our study.

DISCUSSION

Recently, peptic ulcer disease is gradually decreasing due to the widespread use of PPI particularly in west countries. (12,13). Emergent laparotomy has been the standard procedure for perforated peptic ulcer since Mouret et. al. (14) defined the first laparoscopic repair in 1989. Nevertheless, up to day there was not enough evidence of the laparoscopic approach is overwhelmingly superior to open surgery (15). Minimal invasive surgery or laparoscopic surgery of peptic ulcer perforation is achieving widely use because of less postoperative pain, diminished morbidity and decreased postoperative hospital stay. However laparoscopic procedure takes more operative time and experienced staffs are not present everywhere; so laparoscopic perforated peptic ulcer surgery nowadays is not the selected procedure in majority of hospitals. Additionally, performing laparoscopic sutures can take much longer time as compared to open surgical sutures because of the tissue around peptic ulcer perforation is inflamed and fairly fragile (16). In a recent study, findings can be attributed primarily to the competency of the surgical team, demonstrating that the surgeon's learning curve is crucial to the consequences of patients undergoing laparoscopic peptic ulcer perforation surgery. (17).

Additionally, other reports is indicate that open surgery is a reliable method in terms of shorter operative time, especially in the hemodynamic instability (18,19). However, previous retrospective cohort studies revealed that there was no statistically significant difference about operative times between the two groups of surgery (17,20). In Laparoscopic group, increase BMI and a long delay surgery may increase the risk of re-operation than in the laparotomy group (21,22). Also intravenous fluid treatment, use of antibiotic and prevention of delay in surgery are the most important factors affecting the surgical outcome in the preoperative and postoperative period (23), and may also be the associated factors with a reduced risk of reoperation (15).

In our study, none of patients has required reoperation. Additionally, the mean duration of hospital stay and postoperative morbidity were very low in our study and mortality was not also seen in our patient's group.

There are some limitations of this study which have to be demonstrated. Firstly, it was a small retrospective cohort study. Additionally, the postoperative follow-up time was honestly short. There is also only open surgery was performed in our study due to lack of sufficient laparoscopic material to perform the operation.

CONCLUSION

Our findings revealed that Graham's omental patch repair is still a useful method for perforated peptic ulcer disease. Low complication rates, low duration of hospital stay and also low postoperative morbidity can be achieved with

good preoperative and postoperative supportive care in open surgery for PUP. Laparoscopic surgery should be performed only in the presence of experienced surgeon and also in the presence of sufficient laparoscopic materials.

Competing interests: The authors declare that they have no competing interest.

Financial Disclosure: There are no financial supports

Ethical approval: This work has been approved by the Institutional Review Board

REFERENCES

1. Lau JY, Molyneaux E, Telman MD, Belli S. The plasticity of adolescent cognitions: data from a novel cognitive bias modification training task. *Child Psychiatry Hum Dev* 2011;42(6):679-93.
2. Xia B, Xia HH, Ma CW, Wong KW, Fung FM, Hui CK, et al. Trends in the prevalence of peptic ulcer disease and *Helicobacter pylori* infection in family physician-referred uninvestigated dyspeptic patients in Hong Kong. *Aliment Pharmacol Ther* 2005;22(3):243-9.
3. Wysocki A, Budzynski P, Kulawik J, Drozd W. Changes in the localization of perforated peptic ulcer and its relation to gender and age of the patients throughout the last 45 years. *World J Surg* 2011;35(4):811-6.
4. Thorsen K, Soreide JA, Kvaloy JT, Glomsaker T, Soreide K. Epidemiology of perforated peptic ulcer: age- and genderadjusted analysis of incidence and mortality. *World J Gastroenterol* 2013;19(3):347-54.
5. Arora BK, Arora R, Arora A. Modified Graham's repair for peptic ulcer perforation: reassessment study. *Int Surg J.* 2017;4(5):1667-71
6. Wilhelmssen M, Moller MH, Rosenstock S. Surgical complications after open and laparoscopic surgery for perforated peptic ulcer in a nationwide cohort. *Br J Surg* 2015;102(4):382-7.
7. Bas G, Eryilmaz R, Okan I, Sahin M. Risk factors of morbidity and mortality in patients with perforated peptic ulcer. *Acta Chir Belg* 2008;108(4): 424-7.
8. Berne TV, Donovan AJ. Nonoperative treatment of perforated duodenal ulcer. *Arch Surg* 1989;124(7):830-2.
9. Testini M, Portincasa P, Piccinni G, Lissidini G, Pellegrini F, Greco L. Significant factors associated with fatal outcome in emergency open surgery for perforated peptic ulcer. *World J Gastroenterol* 2003;9(10):2338-40.
10. Nasio NA, Saidi H. Perforated peptic ulcer disease at Kenyatta National Hospital, Nairobi. *East Central African J Surg* 2009;14(1):13-7.
11. Ersumo T, W/Meskel Y, Kotisso B. Perforated peptic ulcer in TikurAnbessa Hospital: a review of 74 cases. *Ethiop Med J* 2005;43(1):9-13.
12. Wang YR, Richter JE, Dempsey DT. Trends and outcomes of hospitalizations for peptic ulcer disease in the United States, 1993 to 2006. *Ann Surg* 2010;251(1):51-8.
13. Lau JY, Sung J, Hill C, Henderson C, Howden CW, Metz DC. Systematic review of the epidemiology of complicated peptic ulcer disease: incidence, recurrence, risk factors and mortality. *Digestion* 2011;84(2):102-13.
14. Mouret P, Francois Y, Vignal J, Barth X, Lombard-Platet R. Laparoscopic treatment of perforated peptic ulcer. *Br JSurg* 1990;77(9):1006.
15. Soreide K, Thorsen K, Soreide JA. Strategies to improve the outcome of emergency surgery for perforated peptic ulcer. *Br J Surg* 2014;101(1):51-64.

16. Shah H, Mehta SG, Gandhi MD, Saraj. Laparoscopic peptic ulcer perforation closure: the preferred choice. *Ind J Surg* 2015;77(Suppl 2):403-6.
17. Ge B, Wu M, Chen Q, Chen Q, Lin R, Liu L, et al. A prospective randomized controlled trial of laparoscopic repair versus open repair for perforated peptic ulcers. *Surgery* 2016;159(2):451-8.
18. Bertleff MJ, Lange JF. Laparoscopic correction of perforated peptic ulcer: first choice? A review of literature. *Surg Endosc* 2010;24(6):1231-9.
19. Sanabria A, Villegas MI, Morales Uribe CH. Laparoscopic repair for perforated peptic ulcer disease. *Cochrane Database Syst Rev* 2013;28(2):CD004778.
20. Wang YC, Fu CY, Chen RJ, Yeh CC, Hsieh CH. Comparison between laparoscopic and open repair of perforated peptic ulcer disease in the elderly. *Am Surg* 2011;77(6):803-4.
21. Buck DL, Moller MH; Danish Clinical Register of Emergency Surgery. Influence of body mass index on mortality in perforated peptic ulcer. *Br J Surg* 2014;101: 993-9.
22. Buck DL, Vester-Andersen M, Moller MH. Surgical delay is a critical determinant of survival in perforated peptic ulcer. *Br J Surg* 2013;100(8):1045-9.
23. Moller MH, Adamsen S, Thomsen RW, Moller AM; PULP trial group. Multicentre trial of a perioperative protocol to reduce mortality in patients with peptic ulcer perforation. *Br J Surg* 2011;98(6):802-10.