

Original Research Article

Comparative Study between Omental patch and Omental PluggingDr. Mohammad Reza Asgary^{1*}, Dr. Hosein Hemmati²¹Thoracic Surgeon, Assistance Professor, Department of Surgery, Faculty of Medicine, Guilan University of Sciences, Rasht, Iran²Vascular Surgeon, Associate Professor, Department of Surgery, Faculty of Medicine, Guilan University of Sciences, Rasht, Iran***Corresponding author**

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Abstract: Giant peptic perforation is a life threatening surgical emergency with high mortality, but literature is silent on the exact definition, incidence, management and complications of giant perforations of peptic ulcers. The present study is a retrospective study comparing efficacy of omental plugging and omental patch in the repair of giant peptic perforation (≥ 2 cm in diameter). This study was undertaken in the department of general surgery of Razi Hospital between 2012 and 2016. In 7 patients with giant peptic perforation (group A), omental plugging was done. In group A, mortality rate was 14.2% (1 patient). 5 patients with giant peptic perforation (group B) managed with omental patch that mortality rate was 100%. In our hospital, 85 patients had small peptic perforation (< 2 cm) (group c) that managed with omental patch. In these patients, mortality rate was 3.7%. Giant peptic perforations are rare but is associated with significantly higher mortality when compared to smaller perforations. Our results show that the mortality rate is lower in the omental plugging group, making it a better choice of technique for repair of giant perforations.

Keywords: Giant Peptic Perforation, Omental Plugging, Omental Patch.

INTRODUCTION:

Perforation is the second most common complication of peptic ulcer but nowadays a more common indication for operation than bleeding [1]. Giant peptic perforation is a severe variant of the peptic ulcer and is extremely uncommon and challenging condition to manage. Giant peptic perforations are defined as perforations of size equal to or greater than 2 cm in diameter [2]. Literature is silent on the exact definition, incidence, management and complications of giant perforations of peptic ulcers [3]. These perforations are considered particularly hazardous because of the extensive duodenal tissue loss, friability of the ulcer margins, surrounding tissue inflammation, poor general condition of the patient and overwhelming sepsis due to bacterial peritonitis. These factors are said to preclude simple closure using omental patch, often resulting in postoperative leak or gastric outlet obstruction [3-5]. Various methods apart from standard omental patch have been described for the management of giant perforations and they include partial gastrectomy, jejunalserosal patch, jejunalpedicled graft, omental plug and proximal gastrojejunostomy [3]. Apart from omental plug, all other methods are more elaborate,

time consuming, high postoperative leak and technically difficult to perform [2]. In omental plugging, an omental flap is created and 5-6 length of omental flap is inserted into perforation. The omentum is then fixed to the perforation site with five to six interrupted sutures 2/0 silk taken between the omentum and health duodenum, approximately 3-4 mm away from the margins of the perforation. Very little data is available in literature regarding the definition, incidence, and the management of giant peptic perforations. This paper represents our experience with the management of this subset of peptic ulcer perforations between 2012 and 2016.

METHODS:

The present study is a retrospective study comparing efficacy of omental plugging and omental patch in the repair of giant peptic perforation (≥ 2 cm in diameter). This study was undertaken in the department of general surgery of Razi Hospital between 2012 and 2016. A total of 97 patients underwent emergency surgery for peptic ulcer perforations at our hospital. The case files of all these patients were retrospectively reviewed. Only those patients who were found to have

giant peptic perforations were selected for the study. Patients repaired by omental plugging were taken as group A and patients repaired by omental patch were taken as group B. Parameters compared between the two groups were age, leak rates, mortality and surgery performed.

RESULTS:

Of the total of 97 patients that underwent emergency surgery for peptic ulcer perforations between 2012 and 2016, there were 70 males (72.16 %) and 27 female (27.83%) patients, giving a male to female ratio of 2.59: 1. The age ranged from 19 to 93 years, the mean age being 52.34 years. Of the 97 patients, 12 patients(12.37%) had a giant

perforation(≥ 2 cm)(**Table 1**). Omental plugging was done in seven patients (group A) and omental patch in 5 patients (group B). in small peptic perforation(< 2 cm), 3 patients died due to leak and subsequent sepsis (mortality rate: 3.5%). In giant peptic perforation, 6 patients died due to leak and subsequent sepsis (mortality rate:50%). the patients with giant perforations had significantly increased mortality rate. In 7 patients with giant perforation, omental plug was done(group A) that only one patient died due to leak and subsequent sepsis (mortality rate: 14.28%). In 5 patients with giant perforation, omental patch was done(group B) that all five patients died due to leak and subsequent sepsis (mortality rate: 100%)and therefore in group B mortality rate was higher than group A.

Table 1: Characteristics of patients with Peptic Perforation

Characteristic	
Age (years)	52.34 ± 18.69
Sex, n (%)	
Male	70 (72.16)
Female	27 (27.84)
Diabetes, n (%)	
Yes	20 (20.61)
No	77 (79.38)
Smoking, n (%)	
Yes	61 (62.88)
No	36 (37.11)
NSAID n (%)	
Yes	40 (41.23)
No	57 (58.76)
Alcohol, n (%)	
Yes	35 (36.06)
No	62 (63.91)
H.P, n (%)	
Yes	26 (26.80)
No	71 (73.19)
size of perforation n (%)	
<2 cm	85 (87.62)
≥ 2 cm	12 (12.37)

NSAID -Non-steroidal anti-inflammatory drugs/ H.P- Helicobacter Pylori infection

DISCUSSION:

Peptic ulcer perforation is a common surgical emergency in our part of the world. The overall reported mortality rate varies between 1.3 to nearly 20 % [6,7,8] in different series, and recent studies have shown it to be around 10 % [8]. Factors such as advancing age, concomitant disease, preoperative shock, size of the perforation, delay in presentation and operation, have all been defined by various authors to be risk factors for mortality in such a situation [6,7,8].

Commonly, peptic ulcer perforations are less than 2cm in greatest diameter, and as such, are amenable to closure by omental patch [9]. Our experience does seem to validate this, and this subset of

'small' perforations does seem to have the best outcome(mortality rate: 3.5%).

Giant perforations are considered particularly hazardous because of the extensive duodenal tissue loss and surrounding tissue inflammation, which are said to preclude simple closure using omental patch, often resulting into post-operative leak or gastric outlet obstruction [9,10]. In the absence of any specific definition and guidelines regarding the management of such giant perforations in literature, different authors have recommended varied surgical options from time to time, based on their experience and research. These have included resection of the perforation bearing duodenum and the gastric antrum in the form of a

partial gastrectomy, with reconstruction as either a Billroth I or II anastomosis, or the more morbid procedure of gastric disconnection in which vagectomy, antrectomy, gastrostomy, lateral duodenostomy and feeding jejunostomy are performed, with restoration of intestinal continuity electively after 4 weeks of discharge [11]. Others have recommended conversion of the perforation into a pyloroplasty, or, closure of the perforation using a serosal patch or a pedicled graft of the jejunum, or, the use of a free omental plug to patch the defect, and even, suturing of the omentum to the nasogastric tube [9,10,11,12,13,14]. Proximal gastrojejunostomy and / or vagotomy may be added to these procedures to provide diversion and a definitive acid reducing procedure respectively [11]. However, as can be appreciated, each of these procedures not only prolongs the operating time, but also requires a level of surgical expertise that may not be available in the emergency [13]. In addition, each of these procedures has its own morbidity that may add up significantly to alter the final outcome of the patient, and more importantly, none of them is immune to the risk of leak in the post-operative period, which has been the main concern against performing the omental patch in larger perforations [9,10]. The results of omental patch in small and giant sized perforations in the present series give statistically significant difference ($P < 0.001$).

There is a paucity of data in literature regarding giant peptic ulcer perforation management. The overall incidence of 2 cm or more diameter perforation is about 3% [2]. In our study the incidence was (12.37%).

Omental plugging is simple and easy to master, and, avoids the performance of a major resection in a patient who is already compromised. In the present series, 12 cases were defined to be 'giant' perforation according to the size (more than 2 cm) that we have defined. In 7 patients (group A), omental plug was done that only one patient died due to leak and subsequent sepsis (mortality rate: 14.28%). In 5 patients (group B), omental patch was done that mortality rate was 100%. Therefore, Mortality rates were higher in the group B.

CONCLUSION:

Giant peptic perforations are rare, about 12.37% of total perforations in present study, but is associated with significantly higher mortality when compared to smaller perforations. Omental plugging for giant perforations is associated with lesser cases of mortality when compared to the standard method of omental patch. Our results show that the mortality rate is lower in the omental plugging group, making it a better choice of technique for repair of giant perforations.

REFERENCES:

1. Yuko Kitagawa and Daniel T; Dempsey, stomach in: F. Charles Brunicaudi, Schwartz's Principles of Surgery, Tenth Edition, New York. McGraw-Hill Inc., 2015; 1068.
2. Jani K, Saxena AK, Vagharia R; Omental plugging for large sized duodenal peptic perforation: a prospective randomized study of 100 patients. Southern Med J., 2006;99(5):467-471.
3. Gupta S, Kaushik R, Sharma R, Attri A; The management of large perforations of duodenal ulcers. BMC Surg., 2005;5:15.
4. Chaudhary A, Bose SM, Gupta NM, Wig JD, Khanna SK; Giant perforation of duodenal ulcer. Indian J Gastroenterol., 1991;10:14-15
5. Karanjia ND, Shanahan DJ, Knight MJ; Omental patching of a large perforated duodenal ulcer: a new method. Br J Surg., 1993;80:65.
6. Hermansson M, von Holstein CS, Zilling T; Surgical approach and Prognostic factors after peptic ulcer perforation. Eur J Surg., 1999; 165(6): 566-72.
7. Boey J, Choi KY, Alagaratnam TT, Poon A; Risk Stratification in Perforated Duodenal Ulcers. A Prospective Validation of Predictive Factors. Ann Surg., 1986; 205(1): 22-6.
8. Rajesh V, Sarathchandra S, Smile SR; Risk factors predicting operative mortality in perforated peptic ulcer disease. Tropical Gastroenterol., 2003; 24: 148-50
9. Chaudhary A, Bose SM, Gupta NM, Wig JD, Khanna SK; Giant Perforations of Duodenal Ulcer. Ind J Gastroenterol., 1991; 10: 14-5.
10. Karanjia ND, Shanahan DJ, Knight MJ; Omental patching of a large perforated duodenal ulcer: a new method. Br J Surg., 1993; 80: 65.
11. Cranford CA, Olson RO, Bradley EL; Gastric Disconnection in the Management of Perforated Giant Duodenal Ulcer. Am J Surg., 1988; 155: 439-42.
12. McIlrath DC, Larson RH; Surgical management of Large Perforations of the Duodenum. Surg Clin North Am., 1971; 51: 857-61.
13. Sharma D, Saxena A, Rahman H, Raina VK, Kapoor JP; 'Free Omental Plug': A Nostalgic Look at an Old and Dependable Technique for Giant Peptic Perforations. Dig Surg., 2000; 17: 216-8.
14. Jani K, Saxena AK; Management of Large Sized Duodenal Peptic Perforations by Omental Plugging – A New Technique: A Prospective Randomised Study of 100 patients. Ind J Surg., 2000; 62: 134-8.