

Original Research Article

# Giant peptic ulcer perforation: Omentopexy versus omental plugging - A study

Geeta Sabhnani<sup>1\*</sup>, Shreya Tomar<sup>2</sup>

<sup>1</sup>Assistant Professor, <sup>2</sup>Post graduate resident

General Surgery, Gandhi Medical College, Secunderabad, Telangana, India

\*Corresponding author email: [geetsabh@rediffmail.com](mailto:geetsabh@rediffmail.com)

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## Abstract

Giant peptic ulcer perforation is a life threatening surgical emergency with high mortality rate. This study compares two different surgical techniques Omentopexy and Omental plugging for the treatment of giant peptic perforation. A prospective non-randomized study of 36 patients with giant peptic perforation ( $\geq 2$  cm in diameter) was carried out over a period of 24 months. The highest incidence was seen in males over 50 years of age. Biliary leak rates were 22.22% in the omentopexy group compared to no leak in the omental plugging group. This rate when calculated on standard error of proportion was significant at 5% level ( $p < 0.05$ ). Mortality rate was higher in omentopexy group compared to omental plugging group.

## Key words

Omental plugging, Omentopexy, Giant peptic perforation.

## Introduction

Giant peptic ulcer perforation is a perforation more than or equal to 2 cm and is a surgical emergency. Patient presents with peritonitis in the Emergency surgery department. Laparotomy and Omentopexy is commonly used in emergency management of such perforations.

Omentopexy was first described by Cellan Jones [1], later modified by Graham in 1937 [2]. In this a thin tongue of omentum is drawn over the perforation and held in place by full thickness sutures through the edge of the perforation and this procedure is considered as Gold standard. In cases of Giant peptic ulcer perforation, there is

danger of postoperative leakage on closure by Omentopexy.

Omental Plugging on the other hand is a simple procedure was first described by Karanjia, et al. [3] in 1993. In this procedure, omentum is pulled in through the perforation with the ryle's tube tied to it. The omentum is later sutured to the edges of the perforation.

It is a safe and reliable method of treatment of large sized perforation [4]. Omental plugging is associated with lesser morbidity and mortality compared to omentopexy in the management of giant peptic perforations [5, 6].

## Materials and methods

This study was a prospective nonrandomized case series reports comparing the efficacy of omental plugging and omentopexy. The study was done at emergency department of general surgery in tertiary teaching hospital over two year period from January 2014 to January 2016. Around 872 perforative peritonitis patients were operated at the emergency surgery department of the hospital of which only those patients having giant peptic perforations were included in the study.

### Inclusion criteria

- Patients with peptic ulcer perforations of size >2cm.
- Patients with age 15 to 80 years.

### Exclusion criteria

- Patients with peptic ulcer perforation of size <2 cm.
- Patients with age <15 years and >80 years.
- Malignant gastric ulcer perforation either suspicious or proven by edge biopsy.

Detailed patient history was taken along with doing complete surgical examination; laboratory investigations; X-ray chest; ultrasound abdomen; etc.

Fluid resuscitation was done in all cases and after stabilization; patient was taken for exploratory laparotomy. At laparotomy, patients were randomly allocated to two groups; one for omental plugging (cases) and other for omentopexy (controls).

## Surgical techniques

### Omental plugging

The assistant pushes the nasogastric tube into the perforation and takes it out of the perforation. The free end of the tube was tied to the greater omentum using 3'0 chromic catgut suture. The anesthetist is asked to withdraw the tube. The tube is withdrawn until the omentum occludes the perforation. About 5-6 cm of the omental plug generally suffices. The omentum is fixed to the perforation site with 5-6 sutures of 2-0 silk taken between omentum and serosa of the healthy duodenum or stomach.

### Omentopexy

In omentopexy, a tongue of omentum is sutured in place with full thickness sutures through the edge of the perforation.

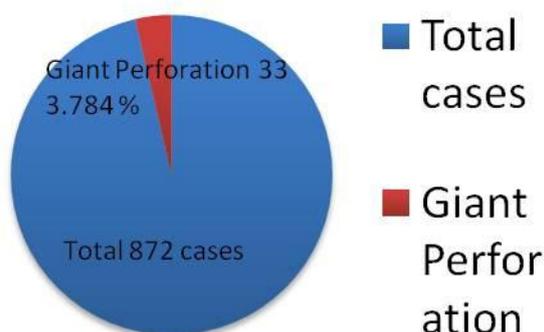
Descriptive epidemiological study was used to study the statistical data and the p value was calculated using the chi square test.

## Results

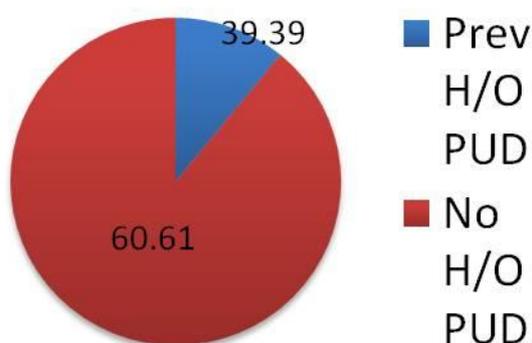
Of 872 patients of operated cases of perforative peritonitis, 36 patients with giant peptic ulcer perforation were considered. 3 patients were excluded of which 2 were suspiciously malignant and 1 edge biopsy was suggestive of malignancy. So, 33 patients were included in the study (3.78%) as per **Figure - 1**.

All patients underwent laboratory investigations, x-ray abdomen (standing); and were given intravenous antibiotics and fluid support before surgery. Appropriate Fluid resuscitation was done in all patients presenting with shock. Patients with previous peptic ulcer disease were as per **Figure - 2**.

**Figure – 1:** Cases of Giant Peptic Perforation.



**Figure – 2:** Patients with previous peptic ulcer disease.



15 patients underwent omental plugging were taken as cases while 18 underwent omentopexy and were taken as controls. Feeding jejunostomy was done in all cases.

The incidence of giant perforation was found to be maximum in >50 years age group with more males involved male/female ratio 4.5:1 (**Table - 1, Table - 2**).

15 patients underwent omental plugging of which 3 were females and 12 males. 18 patients underwent omentopexy of which 3 were females and 15 males (**Table - 2**). Past history of peptic ulcer perforation was present in 39.39% i.e. 13/33 cases (**Table - 3**).

The patients presenting early were about 25%; 33% in about 24-48 hours and 42% after 48 hours of which 8 patients were in shock.

Oral feeding was started by 5<sup>th</sup> to 7<sup>th</sup> day .In cases of biliary leak, orals were delayed and feeding jejunostomy feeds were started.

The giant duodenal perforation was seen in 69.69% while giant gastric perforation was seen in about 30.31% (**Table - 4**).

The occurrence of complications like Respiratory tract infections; Abdominal wound infection; Intraabdominal abscess formation; Intestinal leak; burst abdomen ;gastric outlet obstruction at 6 weeks and 6 months, was studied and compared in the two groups (**Table - 5**).

2 deaths were found in patients of omental plugging and 4 in patients with omentopexy. Overall mortality rate was 18.18% (**Table - 6**). Patients with delayed presentation had a higher mortality rate so had patients with omentopexy as in these cases the occurrence of biliary fistula was high.

The occurrence of biliary fistula/leak was seen in 4 cases of omentopexy (22.22%) compared to no cases of biliary leak in cases of omental plugging. This makes omental plugging a superior procedure in cases of perforative peritonitis. The p value calculated was (p<0.05) which was statistically significant.

## Discussion

Peptic ulcer perforation is a common surgical emergency condition. The advent of better proton pump inhibitors have led to decline in the rates of elective perforation surgery but the emergency perforation rates remain unchanged [7].

There is correlation between the size of perforation and the mortality as per study by Hennessy E [8]; Perforations more than 1 cm have mortality rate of around 24%.The overall incidence of perforation >2 cm or more diameter is about 2.4% according to the study conducted by Jani K, Saxena AK, Vaghasia R, 2006 [4] comparable to the rates in our study of around 3.78%.

**Table - 1:** Age wise Incidence.

Age in years	Omentopexy	Omental Plugging	Total cases	%
<=30	2	2	4	12.12
31-50	5	5	10	30.30
>50	8	11	19	57.57
	15	18	33	

**Table - 2:** Incidence with sex.

Sex	Omental Plugging	Omentopexy	Total cases	%
Male	12	15	27	81.81
Female	3	3	6	18.18
Total	15	18	33	

Male/Female =27/6 =4.5:1

**Table - 3:** Patients with previous peptic ulcer disease.

H/O PUD	Omental Plugging	Omentopexy	Total cases
Present	7	6	13
Absent	8	12	20
	15	18	33

**Table - 4:** Type of Perforation.

Type	Omental Plugging	Omentopexy	Total cases	%
Duodenal Ulcer	9	14	23	69.69
Gastric Ulcer	6	4	10	30.31
Total	15	18	33	

**Table - 5:** Post Operative Complications.

Post OP Complication	Omental Plugging	Omentopexy	Total	P value
Respiratory Infection	2	4	6	>0.05
Wound Infection	5	5	10	>0.05
Intra abdominal abscess	0	2	2	>0.05
Biliary leak	0	4	4	<0.05
Burst abdomen/ Gastric outlet obstruction.	0	0	-	-
Mean hospital stay	13.3 days	13.1 days		>0.05

**Table - 6:** Mortality.

	Omental Plugging	Omentopexy	Total	
Death	2	5	7	>0.05

The highest incidence of giant ulcer perforation was seen in 5<sup>th</sup> decade of life and maximum cases were noted greater than 50 years of age. These results are comparable to those seen in other studies.

The male to female ratio was found to be 4.5:1 whereas in other similar studies it ranged from 8.1:1 to 7.5:7 [4, 5].

The incidence of biliary fistula post surgery in omental plugging group was around 4/18 (22.22%) and 0% in the omentopexy group. The fistula rates are more compared to another similar study by Jani and Saxena who reported rates of 12% and 0% respectively [4, 5, 9].

The possible explanation is from the principle of physics. In the Omental plugging technique, a part of the omentum is taken inside the stomach, even with rise of intra gastric pressure, the omentum is always kept in contact with gastric mucosa. In Omentopexy technique; the repair is done from outside and so with rising intra gastric pressure; the patch could be easily disturbed.

Hence probably higher leak rates are observed in cases of Omentopexy [10] which makes omental plugging a better choice in cases of giant peptic ulcer perforation.

## Conclusion

Giant peptic ulcer perforation is rare but associated with higher mortality rates. Omental plugging seems to be associated with low rates of biliary leak compared to omental plugging and hence should be the procedure of choice in giant peptic ulcer perforation compared to omentopexy.

The limitation of this study is the small number of cases. The study needs to be done on a large scale to achieve results to standardize the procedure as of choice.

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