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RESEARCH ARTICLE

A COMPARATIVE STUDY BETWEEN OMENTOPEXY AND OMENTAL PLUGGING IN MANAGEMENT OF GIANT PEPTIC PERFORATION

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ABSTRACT

Peptic ulcer perforation is a serious complication which affects almost 2-10% of ulcer patients on the average. The patients suspected of peptic perforations undergoing emergency laparotomy were divided into 2 groups of 30 patients each based on the technique of Simple Randomization. Patients were allotted group A: Omental plugging and group b Omentopexy. Pain was present in 8 and 11 patients of omental plugging and omentopexy group respectively. On 1 month follow up, pain was present in 9 patients and out of them 4 were in omental plugging group and 5 were in omentopexy group while no healing wound was present. On 3 months follow up no complication was found in any patients. In present study maximum patients were male (57 out of 60) while maximum patients were in 51-60 years of age group. Omental plugging, a relatively newer and less utilized technique was found to be a superior surgical technique over free omentopexy in the treatment of giant peptic perforation.

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INTRODUCTION

Peptic ulcer perforation is a serious complication which affects almost 2-10% of ulcer patients on the average (Testini et al., 2003 and Soll, 1998). Peptic ulcer perforation presents with an overall mortality of 10% (Rajesh et al., 2003) although some authors report ranges between 1.3% and 20% (Hermansson et al., 1999; Boey et al., 1986). Giant perforations are defined as perforations of size equal to or greater than 2 cm in diameter (Jani et al., 2006). Giant perforations are technically difficult to repair due to the duodenum's complex anatomy and marginal blood supply shared with the pancreas. In spite of the modern advances in surgical, anaesthetic and ancillary facilities, it assumes threatening dimensions. Thus, there is a need to compare closure of peptic perforations by either Graham's patch or omental plugging. We compare the efficacy of omental plugging and omentopexy in patients with giant peptic perforation by this study. Galen (AD 131-201) and Aegineta (AD 625-690) were aware of peptic ulcer disease and described its complications (Walter and Dickinson, 1986). In 2000, Sharma et al found that, the omental plug is a simpler procedure in an extremely large defect of duodenal perforation which cannot be closed by simple technique (Sharma et al., 2000).

In 2005, Lam et al concluded that "three stitch" laparoscopic Graham's patch repair for duodenal perforation was safe and efficient, and might be the choice for laparoscopic repair relatively large perforations. In 2006, Kalpeshjani and Saxena suggested that omental plugging can be safely performed in managing duodenal peptic perforation. In the past, the omentum was considered to be an inert tissue without much biological significance. But since the beginning of the last century, innumerable studies and trials have been conducted by surgeons and scientists all over the world, which have proven that the omentum is a unique, physiologically dynamic tissue with immense therapeutic potential.

In the year 1987, Armstrong and Blower did a study on 235 consecutive patients with a life threatening complication of peptic ulceration, who either died or required emergency surgery. Seventy eight of these high risk patients died; 25 at home, 19 in hospital without surgery and 34 postoperatively. In the year 1989, Crofts et al. (1989) did a study to determine whether surgery could be avoided in some patients with perforated peptic ulcer, we conducted a prospective randomized trial comparing the outcome of nonoperative treatment with that of emergency surgery in patients with a clinical diagnosis of perforated peptic ulcer. In the year 1990, Borra et al. (1990) showed that the clinical characteristics and outcome of patients with peptic ulcer disease (PUD) in

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association with chronic renal insufficiency were compared with those of p In the year 2006, [Jani et al. \(2006\)](#) described that due to friable margins and the moribund state of the patient, managing giant duodenal perforations (>20 mm in diameter) is a challenging task. Patients who had PUD without renal impairment. In the year 2007, [Taj et al. \(2007\)](#) did a study to determine the short-term complications and duration of hospital stay in patients treated with omentopexy as primary repair in perforated duodenal ulcer that were more than 12 hours old and more than 0.5 cm in size. In the year 2011, [Mukhopadhyay et al. \(2011\)](#) described that giant peptic perforation is a life threatening surgical emergency with high mortality. This study aims to compare the success rate between omental plugging and standard omentopexy in the emergency management of giant perforations. Omental plugging is associated with lesser morbidity and mortality compared to omentopexy in the management of giant peptic perforations. The patients suspected of peptic perforations undergoing emergency laparotomy were divided into 2 groups of 30 patients each based on the technique of Simple Randomization. Patients will be allotted group A Omental plugging and group B Omentopexy.

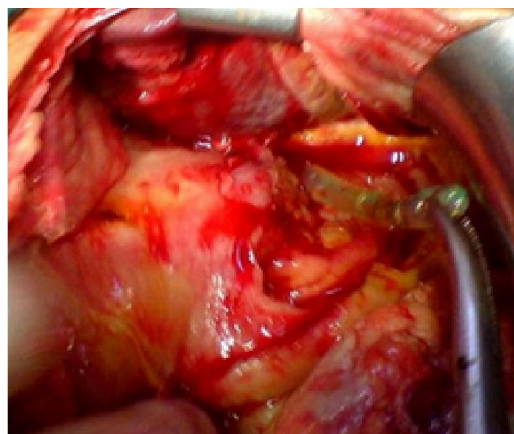
MATERIALS AND METHODS

The patients suspected of peptic perforations undergoing emergency laparotomy were divided into 2 groups of 30 patients each based on the technique of Simple Randomization. Patients will be allotted into Groups A and B.

Group A: Omental plugging

Group B: Omentopexy

Method



Ryle tube withdrawn through perforation site

Omental Plugging

The anaesthetist/assistant is asked to insert the nasogastric tube further and surgeon guided the tip of the tube so that it comes out of the peritoneal cavity through the perforation. The free end of the greater omentum is sutured to the tip of the nasogastric tube using 1-0 rapidly absorbable (chromic catgut) suture. Then the anaesthetist/assistant is asked to withdraw the tube. As the tip went inside the stomach so did the omentum. The tube was withdrawn until the omentum occluded the perforation. About 5-6cm length of omental plug generally sufficed. The omentum is then fixed to the perforation site with 5-6 interrupted sutures of 2-0 round body silk taken between omentum and serosa of healthy duodenum and/or stomach.

Omentopexy/Graham's patch

The perforation is sutured in one layer by three interrupted Lambert sutures with 2-0 round body silk using a patch of pedicled omentum to reinforce the suture line. No attempt will be made to close the perforation prior to placing the omentum as a graft/omentum as a plug.

- Special precaution will be taken not to leave any residual fluid in the abdominal cavity after peritoneal wash.
- One intraperitoneal drain was placed in Morrison Pouch.
- Postoperatively, both the groups will be monitored in terms of no. of days of drain requirement, total drain quantity, no. of days of post-operative hospital stay, symptoms, morbidity and mortality. Each patient was followed up until discharge post operatively.
- Post operative leakage was identified by the presence of bile in the drain fluid and its quantity.
- Post operatively all patients were given Proton Pump Inhibitors i.e, Inj. Pantoprazole 40 mg IV twice daily for a minimum of 7 days.

RESULTS AND DISCUSSION

Table 1. Distribution of cases according to age group (years) in both groups

Age Group (years)	Group				Total	
	Omental Plugging		Omentopexy		No.	%
	No.	%	No.	%		
<40	5	16.7	3	10.0	8	13.3
41-50	6	20.0	7	23.3	13	21.7
51-60	12	40.0	10	33.3	22	36.7
>60	7	23.3	10	33.3	17	28.3
Total	30	100	30	100	60	100
Mean	52.20		54.73			
SD	10.50		9.70			
T	0.971					
P	0.336					

Table 2. Distribution of cases according to sex in both groups

Sex	Group				Total	
	Omental Plugging		Omentopexy		No.	%
	No.	%	No.	%		
Female	2	6.7	1	3.3	3	5.0
Male	28	93.3	29	96.7	57	95.0
Total	30	100	30	100	60	100
χ^2	0.351					
P	0.554					

Table 3. Distribution of cases according to Occupation in both groups

Occupation	Group				Total	
	Omental Plugging		Omentopexy		No.	%
	No.	%	No.	%		
Business	1	3.3	6	20.0	7	11.7
Farmer	15	50.0	11	36.7	26	43.3
House Wives	2	6.7	1	3.3	3	5.0
Labour	7	23.3	9	30.0	16	26.7
Retired	5	16.7	3	10.0	8	13.3
Total	30	100	30	100	60	100
χ^2	5.270					
P	0.261					

Table 4. Distribution of cases according to residential area in both groups

Residential Area	Group				Total	
	Omental Plugging		Omentopexy		No.	%
	No.	%	No.	%		
Rural	20	66.7	19	63.3	39	65.0
Urban	10	33.3	11	36.7	21	35.0
Total	30	100	30	100	60	100
χ^2	0.073					
P	0.787					

Table 5. Distribution of cases according to chief complaints in both groups

Chief Complaints	Group				Total		χ^2	P
	Omental Plugging		Omentopexy		No.	%		
	No.	%	No.	%				
Pain Abdomen	30	100	30	100	60	100	-	-
Vomiting	23	76.7	24	80.0	47	78.3	0.098	0.745
Abdominal Distension	26	86.7	27	90.0	53	88.3	0.162	0.688

Table 6. Distribution of cases according to Previous History in both groups

Previous History	Group				Total		χ^2	P
	Omental Plugging		Omentopexy		No.	%		
	No.	%	No.	%				
Analgesic	26	86.7	27	90.0	53	88.3	0.162	0.688
Alcohol	14	46.7	21	70.0	35	58.3	3.360	0.067
Smoking	26	86.7	27	90.0	53	88.3	0.162	0.688
Gastritis	19	63.3	24	80.0	43	71.7	2.052	0.152

Table 7. Distribution of cases according to Duration of Surgery (minutes) in both groups

Duration of Surgery (minutes)	Group				Total		No.	%
	Omental Plugging		Omentopexy		No.	%		
	No.	%	No.	%				
<80	1	3.3	14	46.7	15	25.0		
81-90	11	36.7	10	33.3	21	35.0		
91-100	15	50.0	5	16.7	20	33.3		
>100	3	10.0	1	3.3	4	6.7		
Total	30	100	30	100	60	100		
Mean	93.30		85.97					
SD	6.44		8.77					
t	3.690							
p	<0.001							

Table 8. Distribution of cases according to postoperative feeding started (days) in both groups

Post Operative Feeding (day)	Group				Total	
	Omental Plugging		Omentopexy		No.	%
	No.	%	No.	%		
4	4	13.3	7	23.3	11	18.3
5	25	83.3	23	76.7	48	80.0
6	1	3.3	0	-	1	1.7
Total	30	100	30	100	60	100
Mean	4.90		4.77			
SD	0.40		0.43			
t	1.240					
p	0.220					

Table 9. Distribution of cases according to duration of hospital stay (days) in both groups

Hospital Stay (days)	Group				Total	
	Omental Plugging		Omentopexy		No.	%
	No.	%	No.	%		
≤10	20	66.7	12	40.0	32	53.3
11-15	7	23.3	8	26.7	15	25.0
>15	3	10.0	10	33.3	13	21.7
Total	30	100	30	100	60	100
Mean	10.27		12.33			
SD	2.63		3.76			
t	2.471					
p	0.016					

Table 10. Distribution of cases according to complications in both groups

Complications	Group				χ^2	P
	Omental Plugging		Omentopexy			
	No.	%	No.	%		
Respiratory Tract Infection (Cough)	8	26.7	10	33.3	0.317	0.573
Intestinal fistula	0		4	13.3	4.286	0.038
Wound dehiscence	4	13.3	5	16.7	0.131	0.718
Wound Infection	6	20.0	8	26.7	0.373	0.542

Table 11. Distribution of Cases according to follow up

Follow Ups	Complication	Group				Total		χ^2	P
		Omental Plugging		Omentopexy					
		No.	%	No.	%	No.	%		
2Weeks	Healing wound	10	33.3	8	26.7	18	30.0	0.739	0.691
	Nil	12	40.0	11	36.7	23	38.3		
	Pain	8	26.7	11	36.7	19	31.7		
1Month	Nil	26	86.7	25	83.3	51	85.0	0.131	0.718
	Pain	4	13.3	5	16.7	9	15.0		
3Months	Nil	30	100	30	100	60	100	-	-

most common age group in both omental plugging and omentopexy group was 51-60 years where 40% patients in omental plugging and 33.3% patients in omentopexy group were found next common group in omental plugging group was >60 years followed by 41-50 and <40 years while in omentopexy group, 33.3%, 23.3% and 10% were in between >60, 41-50 and <40 years of age group. Mean age in omental plugging group was 52.20±10.50 years while in omentopexy group mean age was 54.73±9.70 but the difference was found statistically insignificant (p>0.05). In omental plugging group, out of total 30 patients, 3 patients had their duration of surgery >100 minutes while 11 patients had their duration of surgery 81-90 minutes while only 1 patient had his duration of surgery <80 minutes while in omentopexy group, 14 patients had their duration of surgery <80 minutes, 10 patients had 81-90 minutes, 5 patients had 91-100 minutes and only 1 patient had >100 minutes.

Mean duration of surgery in omental plugging group was 93.30±6.44 minutes and in omentopexy it was 85.97±8.77 minutes and this difference was found statistically significant (p<0.001), in omental plugging group, 20 patients were stayed at hospital for <10 days, 7 patients stayed in hospital for 11-15 days while only 3 patients were stayed in hospital for >15 days. In omentopexy group, 12 patients were stayed in hospital for <10 days while 8 patients were stayed in hospital for 11-15 days and 10 patients were stayed in hospital for >15 days. Mean hospital stay in omental plugging group was 10.27±2.63 days while in omentopexy group, mean hospital

stay was 12.33±3.76 and this difference was found statistically significant (p<0.05). In present study, on 2 weeks followup, healing wound was found in 18 patients and out of them 10 were in omental plugging group and 8 were in omentopexy group, Pain was present in 8 and 11 patients of omental plugging and omentopexy group respectively. On 1 month followup, pain was present in 9 patients and out of them 4 were in omental plugging group and 5 were in omentopexy group while no healing wound was present. On 3 months follow up no complication was found in any patients.

Conclusion

In present study maximum patients were male (57 out of 60) while maximum patients were in 51-60 years of age group.

- Mean age in study group was 52.20 years and in control group mean age was 54.7 years.
- In our study, most of the patient came from rural area. 20 out of 30 in study group and 19 out of 30 in control group.
- Most of the patients were farmers with history of analgesic intake, alcohol and smoking. Most of chief complaints were pain abdomen, vomiting, and abdominal distension.
- The mean operative time was 93.3 minutes in omental plugging group and 85.97 min in omentopexy group.
- Most operative oral feeding was started as soon as peristalsis occurred which varied between 4 to 6 days in study group and 4 to 5 days in control group.

- The mean hospital stay was 10.27 days in omental plugging group and 12.33 days in omentopexy group.
- In present study, respiratory tract infection (cough) was present in 26.7% in omental plugging group and 33.3% in omentopexy group. Wound dehiscence developed in 13.3% in omental plugging group and 16.7% in omentopexy group. Wound infection developed in 20% in omental plugging and 26.7% in omentopexy group.
- Intestinal fistula was 0% in omental plugging group while 4(13.3%) patients developed intestinal fistula in omentopexy group.
- In follow up none of the patient developed symptoms and clinical signs of gastric out let obstruction. Omental plugging, a relatively newer and less utilized technique was found to be a superior surgical technique over free omentopexy in the treatment of giant peptic perforation.
- Omental plugging is better operation in preventing intestinal fistula.
- The average hospital stay was significantly low in patients who underwent omental plugging.

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