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A COMPARATIVE STUDY BETWEEN OMENTOPEXY AND OMENTAL PLUGGING IN TREATMENT OF DUODENAL PERFORATION

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HOW TO CITE THIS ARTICLE:

Pulak Kumar Datta, Asim Kumar Das, Debasis Mondal. "A Comparative Study between Omentopexy and Omental Plugging in Treatment of Duodenal Perforation". Journal of evolution of medical and Dental Sciences 2015; Vol. 4, Issue 87, October 29; Page: 15153-15158, DOI: 10.14260/jemds/2015/2153

ABSTRACT: Duodenal ulcer perforation is a common cause of peritonitis and is considered as one of the most catastrophic complication of duodenal ulcer. Medical management causes decrease rate of elective surgery for duodenal ulcer. However emergency operations for duodenal ulcer are on the rise. This study is aimed at comparing success rate between Omentopexy and omental plugging in emergency management of duodenal perforation. A prospective simple random study has been carried out for one year with 73 patients. Omentopexy was done in 38 patients and 35 patients underwent omental plugging method. Omental plugging was associated with longer operative time but incidence of reperforation is less than Omentopexy. Mean hospital stay in Omentopexy group is higher than omental plugging group. Above all omental plugging is associated with less morbidity and mortality.

KEYWORDS: Omental plugging, Omentopexy, Peptic perforation.

INTRODUCTION: Emergency surgery remains the mainstay of treatment of perforated duodenal ulcers. Perforations are technically difficult to repair due to the duodenum's complex anatomy and marginal blood supply shared with the pancreas. Conventional wisdom dictates that healthy vascularised tissue should be incorporated in the repair of any defect with tissue loss or with friable edges. Several elaborate surgeries have been devised to manage complicated peptic ulcer. Omentopexy is commonly used in emergency management of duodenal ulcer perforation. Omentopexy was first described by Cullen Jones in 1929,¹ later modified by and Graham in 1937.² in the repair of duodenal perforation.

There are several other techniques such as Omental plugging, Control Tube Duodenostomy, Partial Gastrectomy, Jejunal-serosal patch, Jejunal pedicle graft, proximal gastrojejunostomy.³ have been described in literature. However, apart from Omental plugging each of these procedures not only prolongs the surgical time, but also requires a high degree of surgical expertise which may not be available in the emergency setting.

Some patients are already in morbid condition after leakage and also these procedures carry a degree of morbidity. Omental plugging is a simple procedure which does not require much of the significant expertise and can even be performed in a very short time by a trainee general surgeon in a seriously ill patient in an emergency situations. Omental plugging was described by Karanjia et al. in 1993.⁴ Omentopexy and Omental plugging both the procedure can be used in emergency management of duodenal perforation. This study was done to compare this two procedure in terms of success rate.

AIMS AND OBJECTIVES: This study is aimed at comparing the efficacy of these two commonly used omental patching and omental plugging techniques in the management of duodenal ulcer perforations and also about the patient response based on duration of patient presentation.

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SPECIFIC OBJECTIVES: To compare the efficacy of omental plugging and Graham's Patch in patients with duodenal ulcer perforation.

MATERIALS AND METHODS: This study is a prospective randomized comparative study comparing the efficacy between Omentopexy and Omental plugging. The study period was 1 year, from March 2013 to February 2014. The study was undertaken in the department of General Surgery of Burdwan Medical College and hospital. All patient provisionally diagnosed with perforated duodenal ulcer who were fit to undergo, were included in this study. There were 73 cases of duodenal perforation. Every patient underwent routine investigation as well as straight x ray of abdomen in the erect posture preoperatively.

Diagnosis was confirmed at laparotomy. Abdomen was through upper midline incision and after confirmation of diagnosis patient was selected for either Omentopexy or Omental plugging procedure on the basis of simple randomization. 38 patients underwent Omentopexy procedure and 35 patients underwent Omental plugging procedure.

BOTH THE GROUP OF PATIENT RECEIVED SAME PRE AND POST-OPERATIVE PROCEDURES:

Omentopexy (OX): The perforation was sutured in one layer by three interrupted with 2-0 polyglactin with a patch of pedicled omentum.

Omental plugging (OP): The anaesthetist was asked to insert the nasogastric tube further and surgeon guided the tip of the tube so that it came out of the peritoneal cavity through the perforation. Then free end of greater omentum fixed with tip of the nasogastric tube using 1-0 chromic catgut suture.

Then anaesthetist was again asked to withdraw the nasogastric tube so that tip of omentum went in the perforation with the nasogastric tube. 5-6cm of omentum plug inside the perforation was sufficient. Then the omentum was fixed to the perforation site with 5-6 interrupted sutures with 2-0 chromic catgut taken between omentum and serosa of healthy duodenum.

Intraperitoneal drain was placed. A good peritoneal lavage is also important. A drain will not reduce the incidence of intra-abdominal fluid collections or abscesses.

Parameters compared between these two groups were mean operative time, lung complication, post-operative mortality within 30 days of operation, development of septicaemia, development of intra-abdominal abscess, development of wound infection commencement of oral feeding, duration of hospital stay.

The analysis of data was done by using IBM SPSS 22. Descriptive statistics has been used to calculate frequency of different parameters.

Student T Test, Fisher's Exact Test, Chi-square Test have been used for comparison. P value <0.05 is considered as statistically significant.

RESULTS AND ANALYSIS: 73 cases of duodenal perforation. All cases were male. Omentopexy was done in 38 patients and rest of the patients underwent omental plugging procedure. Age of the patients ranged from 26 to 57 mean age being 44.4 years. Highest incidence was seen in the age group of 41-50.

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Age Group (year)	Frequency (%)
<30	7 (9.59%)
31-40	14 (19.18%)
41-50	30 (41.10%)
>50	22 (30.14%)
Table 1: Age distribution	

The incidence of wound infection was 21.1% in OX group and 14.3% in OP group. Incidence of reperforation was higher in Omentopexy group (10.5%) than Omental plugging (5.7%).

Intra-abdominal abscess occurred in 4 patients (10.5%) of Omentopexy group and 3 patients (8.6%) of Omental plugging group. Septicemia developed in 6 patients (15.8%) of Omentopexy group while 4 patients (11.4%) of Omental plugging group was suffered from septicemia.

The incidence of lung complication 13.2% in Omentopexy group and 11.4% in Omental plugging group. All the above parameters was statistically insignificant and no conclusion can be drawn from these above parameters that which one is better procedure. These data are statistically insignificant.

Mean operative time was 62 min for Omentopexy group and 99 min in Omental plugging group. Mean operative time was higher in Omental plugging group as it is a newer procedure and due to inexperience of the surgeon. Oral feeding started in Omentopexy group with appearance of peristalsis usually between 3-4 days.

In Omental plugging group it varied between 4-5days. As it is a new procedure oral feeding started cautiously. Mean hospital stay was 12.9days in Omentopexy group and it was higher than Omental plugging group which was 11.5days. These above data are statistically significant. The number of total mortality was 4. 3 in the Omentopexy group and 1 in the Omental plugging group. This data is statistically insignificant.

PARAMETER	OMENTOPEXY (n=38)	OMENTAL PLUGGING (n=35)	P Value
Wound Infection	8(21.1%)	5(14.3%)	>0.05
Table 2: Wound infection			

PARAMETER	OMENTOPEXY (n=38)	OMENTAL PLUGGING (n=35)	P Value
Reperforation	4(10.5%)	2(5.7%)	>0.05
Table 3: Reperforation			

PARAMETER	OMENTOPEXY (n=38)	OMENTAL PLUGGING (n=35)	P Value
Intra-abdominal abscess	4(10.5%)	3(8.6%)	>0.05
Table 4: Intra-abdominal abscess			

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PARAMETER	OMENTOPEXY (n=38)	OMENTAL PLUGGING (n=35)	P Value
Septicemia	6(15.8%)	4(11.4%)	>0.05
Table 5: Septaecemia			

PARAMETER	OMENTOPEXY (n=38)	OMENTAL PLUGGING (n=35)	P Value
Lung complication	5(13.2%)	4(11.4%)	>0.05
Table 6: Lung complication			

PARAMETER	OMENTOPEXY (n=38)	OMENTAL PLUGGING (n=35)	P Value
Mean operative time (in Minute)	62±5.56	99±9.12	< 0.01 *
Table 7: Mean operative time (in minute)			

PARAMETER	OMENTOPEXY(n=38)	OMENTAL PLUGGING (n=35)	P Value
Oral feeding days	2.84±1.00	4.05±0.93	< 0.01 *
Table 8: Oral feeding (days)			

PARAMETER	OMENTOPEXY(n=38)	OMENTAL PLUGGING(n=35)	P value
Mean hospital stay (in days)	12.92±3.0	11.54±1.9	<0.05
Table 9: Mean hospital stay (in days)			

PARAMETER	OMENTOPEXY(n=38)	OMENTAL PLUGGING (n=35)	P Value
Mortality	3(7.89%)	1(2.85%)	>0.05
Table 10: Mortality			

DISCUSSION: There is a decrease in elective peptic ulcer surgery but the incidence of emergency operation for duodenal perforation is increases according to some studies.⁵ this comparative study was conducted in Burdwan Medical College and Hospital, on patients underwent laparotomy for duodenal ulcer perforation during March 2013 to April 2014. Total 73 patients were enrolled for the study after confirming to the inclusion criteria and written consent for being included in the same.

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In our study the highest incidence was seen in the 5th decade which is similar to other studies.^{6,7,8} In our study the highest incidence was seen in the 5th decade which is similar to other studies.^{6,7,8}

In this study post-operative complications encountered were wound infection, intra-abdominal abscess, lung complication, septicemia, Reperforation. Wound infection (OX -21.1%, OP -14.3%), septicemia (OX-15.8%, OP-11.4%), and lung complication (OX-13.2%, OP-11.4%) were the commonest complications. These figures correspond to the available literature. Hastings et al reported commonest complication was wound infection.⁹

Oral feeding in OX group was started as soon as peristalsis occurred, which is usually varied between 3 to 4 days. In OP, as it is a new procedure and as omentum was sutured with the nasogastric tube, initially we delayed the starting of oral feeding, usually varied between 4-5 days.¹⁰

In our study 8 patients (21.1%) of OX group had wound infection, 4patients (10.5%) had intra-abdominal abscess, 5 patients (13.2%) had lung complication, 6patients (15.2%) had septicemia, 4 patients (10.5%) had reperforation. While in patients treated with Omental plugging 5patients (14.3%) had wound infection, 3 patients (8.6%) had intra-abdominal abscess, 4patients (11.4%) had lung complication, 4 patients (11.4%) had septicemia, 2patients (5.7%) had reperforation.

All of the above data was statistically insignificant and no conclusive evidence can be drawn from this study that any of the two procedures is better in preventing wound complication, intra-abdominal abscess, lung complication, septicemia or reperforation but the incidence of complication was greater in OX. Similar observation was made by Mukhopadhyay et al.¹⁰

Mean post-operative stay for OX was 12.9days while in OP was 11.5days. In our study the difference in the post-operative stay between the OX and OP was statistically significant. Higher hospital stay is seen OX group because patients in this group developed reperforation and there was greater incidence of post-operative complication with increase hospital stay.

Mean operative time for OX group was 62min. Mean operative time for OP was 99min. According to our study OX has least operative time compared to OP procedures. Operating time for OP was significantly more (<0.01) than operative time for OX. Omental plugging is a new procedure and it is not often practiced, so it took significantly more time than Omentopexy. Similar observation made by Mukhopadhyay et al.¹⁰

In our study mortality rate of OX was 7.89% while 2.85% in OP group and it is not statistically significant. The Overall reported mortality rate varies between 1.32 to nearly 20% in different series.^{11,12} and recent studies have shown it to be around 10%.¹¹

CONCLUSION: This study was done to compare the efficacy of two different procedure performed for duodenal perforation operation with a sample size of 73 patients underwent laparotomy for duodenal perforation at Burdwan Medical College and Hospital from March 2013 to February 2014.

One is Omentopexy and another is Omental plugging. On the basis of study we can conclude that:

1. Majority of cases of duodenal perforation is seen in 5th decade of life.
2. Omental plugging is associated with less incidence of post-operative complication in compared to Omentopexy procedure for example wound infection, reperforation, lung complication, septicaemia and intra-abdominal abscess.

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3. Omental plugging is associated with less number of mortality.
4. Omental plugging is associated with higher mean operative time as it is a relatively newer and less utilized technique.

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FINANCIAL OR OTHER

COMPETING INTERESTS: None

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Date of Submission: 09/09/2015.
Date of Peer Review: 10/09/2015.
Date of Acceptance: 01/10/2015.
Date of Publishing: 27/10/2015.