

Original Research Article

Role of drains in cases of peptic ulcer perforations: comparison between single drain versus no drain

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ABSTRACT

Background: Peptic ulcer perforation is one of the commonest causes of peritonitis and needs immediate surgical intervention after prompt resuscitation if mortality and morbidity are to be contained. Aims and objectives of the study was to compare role of Intra-abdominal drains prophylactically after plugging of these perforations single drain or no drain.

Methods: In this study, we compared the relative safety and efficacy of putting single drain prophylactically near operation site or in natural abdominal fossae (hepato-renal pouch or sub hepatic) and no drain in cases of peritonitis due to peptic ulcer perforation. Study was done on 60 patients (one drain put in 30 patients Group A and no drain was put in other 30 patients of Group B). We handle the perforation after thorough peritoneal lavage with warm saline and metrogyl. All the perforation was closed by Graham's Patch.

Results: No significant difference between drain and non-drain group as far age and sex concerned. Significant difference was seen in operative duration, hospital stay, wound dehiscence and post-operative fever, intraperitoneal collection or abscess formation. So use of drains are not effective in preventing post-operative infection rather there are chances of its blockage due to debris, intestine or omentum and tubes itself are source of infection as foreign body and there are chances of migration of bacteria from exterior to peritoneal cavity via these drains.

Conclusions: Non drainage of peritoneal cavity after peptic ulcer perforation surgery is an effective method to reduce operative duration, hospital stay and wound dehiscence and post-operative pyrexia.

Keywords: Peptic ulcer, Peritonitis, Tube drain

INTRODUCTION

We are using intraperitoneal drains since ages and as most of surgeons still adhere to old concept of Lawson Tait "When doubt put drain".¹ Hippocrates used tubes to remove ascitic fluid from abdominal cavity.² In 19th century, Theodore Billroth believed that drainage of peritoneal cavity is must for saving lives of patients after GI surgery.^{2,3} Peptic ulcer perforation needs special

attention with prompt resuscitation and proper surgical management to reduce morbidity and mortality.^{4,5} A lot of work is being done to reduce morbidity by containing use of drains after surgery. In 1986, Hoffman et al performed first human prospective study of prophylactic drainage of colonic anastomosis and found that quantity or character of intraperitoneal drainage had not altered the clinicians to the presence of an anastomotic leak.⁶ Drain

placement have no significant effect on anastomotic leaks.

The purpose of use of drain prophylactically is to drain fluids, pus, blood or necrotic debris which interfere wound healing and is a source of infection or there can be ascending infection via the drain.^{7,8} In peptic ulcer perforation common practice is to put drains through separate stab incision tube drain is placed at hepato-renal pouch or sub hepatic region and another tube in pelvis and even some surgeons practice to put another drain in left paracolic gutter also and these tube drains are fixed with stitch to prevent migration or pull act of drain from abdominal cavity. These drains are usually prophylactic and use of these drains following any gastrointestinal surgery is a matter of contention.⁹⁻¹¹ Sometimes it is very difficult to decide whether to put a drain or not and then to decide when to remove a drain needs experience of the surgeon.⁹⁻¹²

Drains left in place for long time may be difficult to remove or early removal may decrease the risk of complications especially infection.¹³ The basic purpose of these drains is for warning the surgeon of potential intra-abdominal complications.¹⁴ Prophylactic use of drains for drainage of peritoneal cavity is a controversial issue and many randomized trials are done to establish its use and there are studies who consider that drainage of peritoneal cavity is not possible with these tubes and these don't serve any purpose.^{11,15,16}

Drains are not a substitute for good surgical technique.^{17,18} The aim of this study is to evaluate and compare the benefit of no drain vs single drain in cases of peptic ulcer perforation surgery.

Several studies have also failed to show any benefit from tube drains placed in secondary bacterial peritonitis due to peptic ulcer perforation simple acute and complicated appendicitis.¹⁹⁻²²

Objective of study is to find that whether tube drain is required after peptic ulcer perforation or not and what are its postoperative advantages or disadvantages as compare to cases where we don't drain.

METHODS

The study was conducted at Punjab Institute of Medical Sciences, Jalandhar, Punjab in Department of Surgery from June 2017 to September 2019. Patients presented to emergency with features of peritonitis, i.e. pain abdomen with distension, rigidity and guarding. On x-ray abdomen standing view air under diaphragm was present.

Total study patients of peritonitis due to peptic ulcer perforation were selected. Each group consisted of 30 patients. Group A underwent single tube drain of 28 Fr prophylactically near operation site in sub hepatic or hepato-renal pouch and Group B no drain was put. All

the patients subjected to exploratory laparotomy through upper midline incision with thorough peritoneal lavage and surgery for perforation done. Graham's omental patch in pyloric and pre-pyloric perforations was used.

All patients of duodenal perforation first part (D1) and Gastric perforation were included in study.

Exclusion criteria

Multiple perforations, traumatic perforations and severe co-morbid conditions.

Nature of surgical procedure was explained to the patients and informed consent was taken from the patients. Approval from ethical committee for the study was obtained.

RESULTS

Prospective study was done and most of Patients fall between 26-70 years of age in both A and B groups being 93%-33%. The maximum number of patients in group A (with drain) 11 (36.7%) found in age group B of 41-55 years. Similarly, the maximum number of patients in group B (without drain) were 12 (40%) found in age group of 41-55 years (Table 1).

Table 1: Distribution of patients according to age.

Age group in years	Group A (with drain)		Group B (without drain)	
	No.	%	No.	%
<25	2	6.70	2	6.7
25-40	9	30	7	23.30
41-55	11	36.70	12	40.00
56-70	7	23.30	6	20.00
>70	1	3.3	3	10.00
Total	30	100	30	100

Sex distribution of patients in Group A (with drain) there were 29 (96.7%) male and 1 (3.3%) female. In Group B (without drain) distribution was same as group A (Table 2).

Operation time was more in Drain (group A) than in No drain (group B) and difference is statistically significant (p<0.001) (Table 3).

Table 2: Distribution patients according to sex.

Sex	Group A (with drain)		Group B (without drain)	
	No.	%	No.	%
Male	29	96.70	29	96.70
Female	1	3.3	1	3.3
Total	30	100	30	100

Post-operative hospital stay was significantly less in non-drain Group B than with drain Group A ($p < 0.001$) (Table 4).

Table 3: Comparison of operating time.

Operation time (duration) in minutes	Group A (drain)	Group B (no drain)	P value
	112±41.0	78±78.2	<0.001

Table 4: Comparison of hospital stay (in days).

Hospital stay (in days)	Group A (drain)	Group B (no drain)	P value
	10±3.8	6±3.2	<0.001

Table 5 shows comparison of partial and total wound dehiscence in 2 groups. 7 patients out of 30 patients developed partial dehiscence while 2 patients developed total wound dehiscence in Group A. Only 2 patients develop partial wound dehiscence while 1 developed total wound dehiscence in 30 patients in group B. Partial dehiscence was significant while total dehiscence was not significant.

Table 5: Comparison of wound dehiscence in 2 groups.

Wound dehiscence	Group A (drain)	Group B (no drain)	P value
Partial	7	3	<0.001
Complete	2	1	Not Significant

Post-operative fever above 98.6 degrees Fahrenheit was presented in both groups in post-operative period. It remained there for long duration 7±2 days in group A (drain) and 3±2 days in Group B (non-drain) (Table 6).

Table 6: Comparison of post-operative fever (in days).

Post-operative fever in days	Group A (drain)	Group B (no drain)	P value
	7±2	6±2	<0.001

No patient had postoperative leak from perforation site. No intraoperative collection or abscess formation seen in both groups.

DISCUSSION

Role of drain in peritoneal cavity after peptic ulcer perforation is to evacuate intraperitoneal collection like, blood, bile and intestinal contents. Perforation of peptic ulcer is conventionally treated by classical Graham patch technique described by Graham.²³ Now a days many gastrointestinal operations can be performed safely without prophylactic drainage, drains would be omitted

after hepatic, colonic or rectal resection with primary anastomosis and appendectomy for any stage of appendicitis.² Studies never concluded that there was no significant benefit of drainage in reducing risk of leak or other surgical complications and found only one in 20 of the drains contains pus or enteric contents, which represent only 5% sensitivity for the detection of anastomotic leaks.^{2,24} Studies concluded that these drains acted like a foreign bodies and the increases risk of surgical site infections and potentially anastomotic leak in GI surgery.²⁵ Furthermore, drains are causative factor for local pain and they interfere with the ambulation of patients.^{7,8} Use of thinner and softer tubes as drains are usually ineffective as there is always risk of getting these tubes blocked or kinked.¹⁰ In our study also use of drain is not beneficial, it rather increases operative time, hospital stay and it is significant and our study is consistent with other studies.^{20,26-30} Wound dehiscence occurred in 13 cases out of 60 patients. Total 3 patients developed complete wound dehiscence 2 in drain group and just 1 in no drain group. Partial wound dehiscence was also high in drain group. All the 3 patients in complete dehiscence required resuturing. This is an agreement with previous studies.^{19-22,31,32} No patient had postoperative leak from perforation site. We handled the perforation after doing peritoneal lavage and aspirating all the debris from the peritoneal cavity This prevents handling of peptic ulcer perforation site during thorough peritoneal lavage. Even in our study we found no intraperitoneal abscess in both drain and no drain group suggesting that drain doesn't prevent intraperitoneal abscess formation. Though these are the drain associated complications like drain site infections, pain, pulling out of omentum through drain wound during its removal, intestinal obstruction and fluid leakage from drain site for 2-3 days.²⁰ In present study we observed no such complication in both groups. Drains are also associated with risk of ascending infection by the drain.^{7,8} Postoperative fever was present in both groups however duration of fever was 7±2 days in drain group and 3±2 days in no drain group which was significant again it is in agreement with earlier studies.^{19,21,22,31-33}

CONCLUSION

We conclude that draining of peritoneal cavity by tube drain in patients after peptic ulcer perforation surgery is not required as it not only increases operation duration, length of hospital stay and postoperative complication as compared to cases where we don't drain.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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