ORIGINAL RESEARCH PAPER

Volume-8 | Issue-7 | July - 2019 | PRINT ISSN No. 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

IS PROPHYLACTIC DRAINAGE OF PERITONEAL CAVITY AFTER EXPLORATORY LAPROTOMY NECESSARY? : A CASE STUDY.

General Surgery

Dr Harish Chauhan — Professor, Department Of General Surgery, Surat Municipal Institute of Medical Education & Research, Surat (Gujarat), India.

Dr Mohammed Anis Shoeb Mansuri* — 3rd Year Resident, Department Of General Surgery, Surat Municipal Institute of Medical Education & Research, Surat (Gujarat), India. *Corresponding Author

Dr Amit Polara — Master Of General Surgery, Surat Municipal Institute of Medical Education & Research, Surat (Gujarat), India.

ABSTRACT

Surgeons are using prophylactic drainage of peritoneal cavity on regular basis after abdominal surgery since its benefit was demonstrated by Sim's.[1] But it was not accepted by all surgeons. Surgeons who were in favour, argued that drainage of peritoneal cavity can detect early complications and helps in saving many lives while those who were not in favour argued that drainage of peritoneal cavity is not possible. Therefore its useless.[2-4] Several randomized control trials were done to establish the value of prophylactic drainage after abdominal surgery.[4] The results of these studies revealed that the use of prophylactic drainage of peritoneal cavity is not beneficial in many situations.[5] These surgeons still adhere to the old concept of Lawson Tait[6] "when doubt drain".

The aim of this study was to determine post-operative complication in patient of exploratory laparotomy with or without drain and to study time duration of hospital stay in these patients.

KEYWORDS

exploratory laparotomy, drain, complications

AIMS AND OBJECTIVES:

This is a study of a total of 52 cases operated as exploratory laparotomy (including exploratory laparotomy with drain and exploratory laparotomy without drain) carried out at our institute.

1. To study post-operative complication in patient of exploratory laparotomy with or without drain
2. To study time duration of hospital stay in patient of exploratory laparotomy with or without drain.

MATERIALS AND METHODS:

- This prospective observational study was carried out in the Department Of General Surgery, SMIMER Hospital, Surat, Gujarat, India.
- The numbers of cases considered for the study were 52.
- The patients attended the surgical outpatient department and emergency department included in the study.
- All the patients presenting to department of surgery underwent laparotomy for peptic ulcer perforation (PUP), simple and complicated acute appendicitis (appendicular perforation), small bowel obstruction (SBO) , traumatic and non-traumatic perforation of small and large bowel and GI malignancy.
- The patient matching inclusion criteria were included and those falling within the exclusion criteria were eliminated out of the study.

Sample size and Selection of Subjects:

- Sample Size Calculated by using open EPI Software Considering
- Mean hospital stay of (Case)=9+/-4
- Mean hospital stay of (Control)=5+/-3.5
- From Previous study (Salamat khan et an,2014)
- power (1-B)=90%
- Level of significance=99%
- Sample Size=52 ,26 in each group.

ENROLLMENT CRITERIA

- **Inclusion criteria:**

Patient undergoing exploratory laparotomy for peptic ulcer perforation (PUP), simple and complicated acute appendicitis (appendicular perforation), small bowel obstruction (SBO) , traumatic and non-traumatic perforation of small and large bowel and GI malignancy

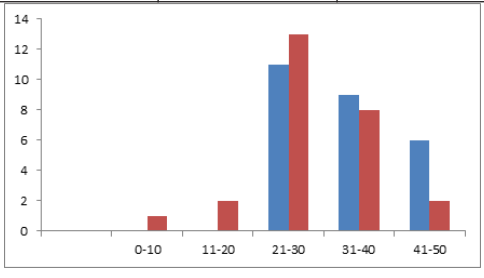
- **Exclusion criteria:**
- Patient below age of 5 years and above age of 65 years
- Patient if seropositive
- Patients with uncontrolled DM
- Patients in which intraoperative severe peritonitis, patient presenting with septicemia, patient presenting with altered renal profile and liver profile.

RESULTS:

This study has been carried out during the period of October 2016 to October 2017 at our institute. In this study, a total of 52 patients who had undergone exploratory laparotomy with or without drain were studied. The patients having septicemia and altered liver and renal function were excluded from study. The following date makes an attempt to summarize the details of observations noted during the study. The results of present study are given below:

Table No. 1 Age Wise Distribution:

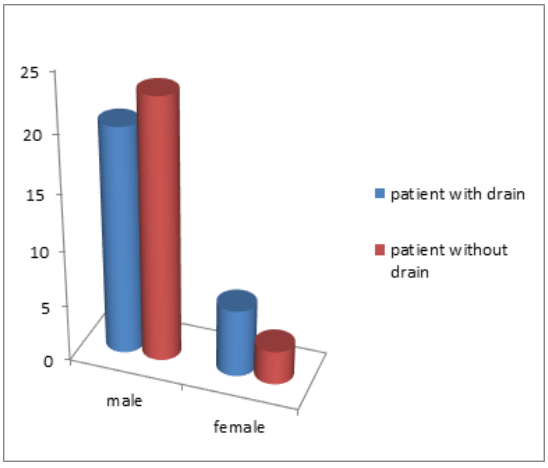
Age group (in years)	Patient with drain	Patient without drain
0-10	0	1
11-20	0	2
21-30	11	13
31-40	9	8
41-50	6	2
TOTAL	26	26



From the above table it is seen that the incidence of laparotomy was highest in the age group of years 21-30 years, in both the patients with drain and without drain. The youngest patient in this study was 7 years old and oldest was 46 years old.

Table No. 2 Genderwise Distribution Of Cases

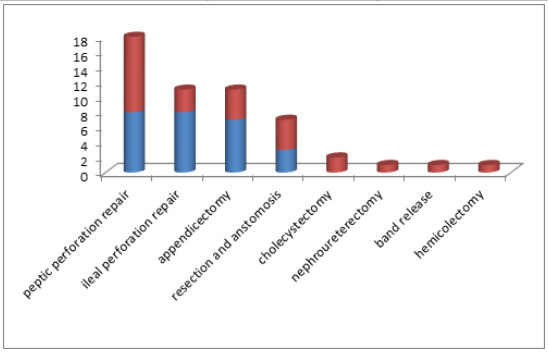
Sex	Patients with drain	Patients without drain
Male	20	23
Female	6	3



In our study, it is seen that laparotomy is more common in males. Males outnumber females in almost all age groups in both patients with drain and without drain in present study.

Table No. 3 Types Of Laparotomy

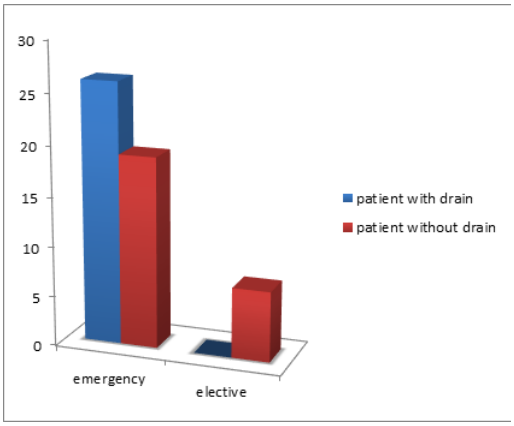
TYPES OF LAPAROTOMY	Patient with drain	Patient without drain
Peptic perforation repair	8	10
Ileal perforation repair	8	3
Appendicectomy	7	4
Resection and anstomosis	3	4
Cholecystectomy		2
Nephroureterectomy		1
Band release		1
Hemicolectomy		1



In our study, maximum patients without drain were of peptic perforation repair and Ileal perforation repair. Patients who had undergone Appendicectomy were more common in patients with drain.

Table No. 4 Nature Of Operation

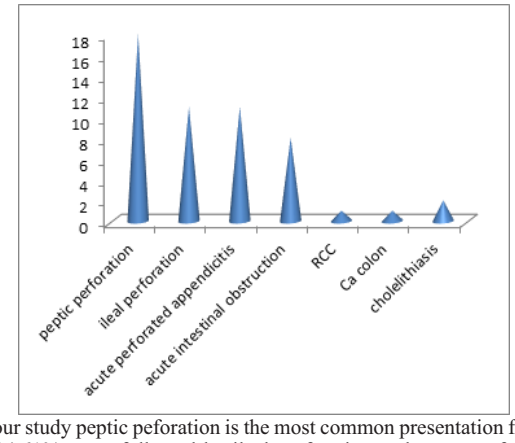
Nature of operation	Patient with drain	Patient without drain
Emergency	26	19
elective	0	7



In our study, emergency operations were the most commonly done with drain while elective operations were most commonly done without drain.

Table No. 5 Different Presentations Of Patients

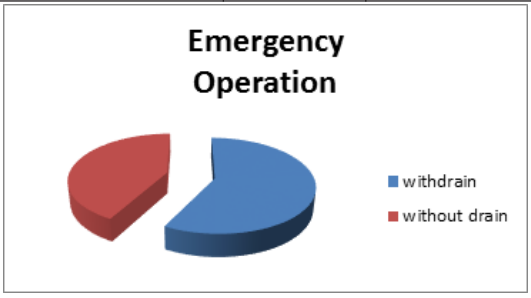
Presentation	No. of cases	Percentage
Peptic perforation	18	34.61%
Ileal perforation	11	21.15%
Acute perforated appendicitis	11	21.15%
Acute intestinal obstruction	8	15.36%
RCC	1	1.92%
Ca.colon	1	1.92%
Cholelithiasis	2	3.84%



In our study peptic peforation is the most common presentation found in 34.61% cases followed by ileal perforation and acute perforated appendicitis seen in 21.15% cases.

Table No 6 Emergency Operation

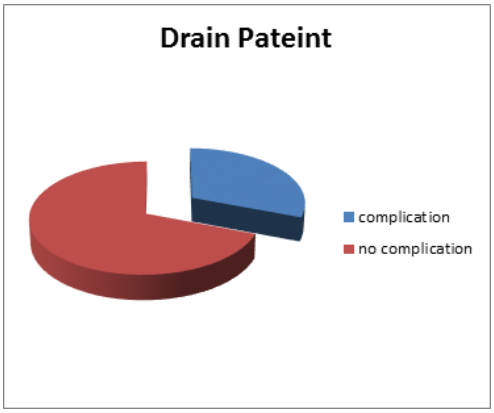
Emergency operation	No. of patients	Percentage
With drain	**26**	**57.77%**
With out drain	19	42.22%



In our study 45 emergency patients 26 patients are operated with drain and 19 patient are operated without drain .

Table No. 7 Complication In Patients With Drain:

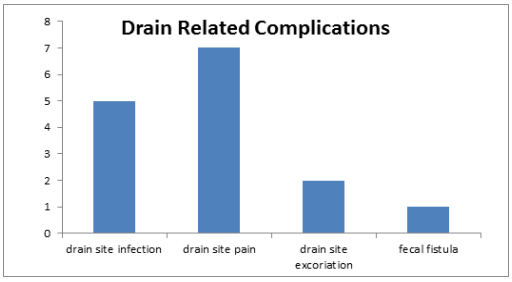
Drain patient	
Complication	8(30.76%)
No complication	18(69.23%)



In our study out of 26 patients with drain related complications seen in 8 patients.

Table no : 8
Drain Related Complications.

Drain related complication	No. of cases
Drain site infection	5
Drain site pain	7
Drain site excoriation	2
Fecal fistula	1



Most common drain related complication is drain site was pain followed by drain site infection and drain site excoriation.

Table No. 9 Duration Of Hospital Stay

Patients	Average Hospital stay(days)
Patient without drain	6 days
Patient with drain	10 days

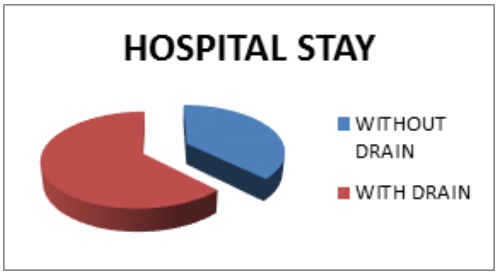
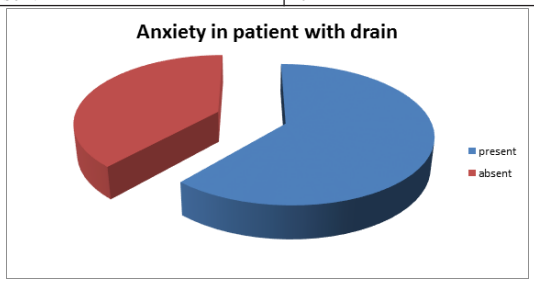


Table No 10 Anxiety In Patient With Drain

Anxiety	No of patients
Present	16
Absent	10



In our study out of 26 patient with drain anxiety was present in 16 patients.

DISCUSSION:

Prophylactic drainage of peritoneal cavity is commonly used to remove intra peritoneal collections like blood, bile and intestinal contents. The use of prophylactic drainage after gastrointestinal surgery was a common teaching practice during surgical residency programme that has passed through generations of the surgeons and it became the rule of thumb. Surgeons have adopted this rule after Lawson Tait [6]who advocated 'when doubt drain' the peritoneal cavity after GI surgery. The aim of prophylactic drainage of peritoneal cavity is to detect early postoperative complication after GI surgery. However, surgically placed drain is not without risk. The result of various studies has shown that prophylactic drainage of peritoneal cavity is associated with increased rate of complications.[7-9]

In present study in the age group of 0-10 total no of patient is 1 and that is without drain,in age group of 11-20 total no of patients are 2 and that are without drain, maximum no of patients are included in age group of 21-30 in both groups 11 in drain group while 13 in patients without drain, in age group of 31-40; 9 patients with drain and 8 patients are without drain, in age group of 41-50; 6 patients are with drain and 2 patients are without drain. As the age increases no of patients are with drain increases. Patients without drain have comparative lower age group.[10]

In present study 20 male patients are operated with drain while 23 patients are operated without drain and 6 female patients are operated with drain and 3 female patients are operated without drain so male are more in patients without drain while females are more in patient with drain.[11-12]

In present study peptic perforation repair is commonly performed surgery in 8 patients with drain and 10 patients without drain while ileal perforation repair is 2nd most common operation performed in 8 patients with drain and 3 patients without drain.

Appendicectomy is 3rd commonly performed surgery in 7 patients with drain and 4 patients without drain. In resection and anastomosis 3 patients are with drain while 4 are without drain, 2 patients of open cholecystectomy, 1 of open nephroureterectomy, 1 of exploratory laparotomy with band release and 1 patient of lap assisted open hemicoloectomy are operated without drain.

In present study 26 patients with drain are operated in emergency while 19 patients are operated without drain and 7 patients are operated in elective operation without drain no patient are operated with drain in elective operation.[13]

In present study maximum patients are of peptic perforation that are 18 in no,11 patients are of ileal perforation, 11 of acute perforated appendicitis , 8 of acute intestinal obstruction, 1 of RCC, 1 of Ca colon and 2 of cholelithiasis

In present study out of 52, 45 patients are operated in emergency. Out of 45 emergency patients 26 patients are operated with drain while 19 patients are operated without drain. In present study out of 26 patients with drain complications are seen in 8 patients that is of 30.76% while in 18 patients with drain no complication detected that is of 69.23% while patients without drain no complication was observed .

In present study average hospital stay is 6 days in patient without drain while 10 days in patient with drain. In present study drain site infection is seen in 5 patients, drain site pain is seen in 7 patients, drain site excoriation in 2 patients and in 1 patient fecal fistula seen. In present study out of 26 patients with drain anxiety seen in 16 patients while no anxiety seen in patient without drain.

Data of the present study clearly demonstrates that prophylactic placement of intra peritoneal drain is not beneficial. It does not only increases hospital stay but also increases wound infection rate, postoperative fever, and drain related complication like drain site infection, drain site abscess, drain site pain, drain site excoriation, discharge from drain wound and subcutaneous infection. Anxiety of patient with drain is more. Mobilization is early in patient without drain while late in patient with drain. These finding were in agreement with previous studies [4,10-14]

It is always debated that non-drainage of peritoneal cavity may lead to more complication like intra peritoneal abscess and delay in diagnosis of anastomotic leak which increases morbidity and mortality. So use of drain is justified. But present study did not observe intra peritoneal abscess in no-drain group, suggesting that drain is not necessary to prevent intra peritoneal abscess formation. Good surgery and proper peroperative peritoneal lavage will help in prevention of intra peritoneal abscess rather than prophylactic drainage of peritoneal cavity. If the leak was present it can be suspected clinically, on the basis of deterioration in general condition with toxic features, signs of peritonitis, increase purulent or fecal discharge from incision and confirmed by ultrasonography and re-exploration. So, there is no question that only drain gives signal of leak and helps in early diagnosis, even an alert and experienced surgeon can suspect clinically with equal effectiveness as done in this study. Moreover, easy availability of non-invasive radiological investigation like ultrasonography, clinically suspected (such as features of peritonitis) cases can be confirmed very early without drain. These cases can also be managed by interventional radiology guided drainage without

doing re-laparotomy. This procedure has markedly reduced the number of re-laparotomies for surgical complications, thereby supporting abdominal surgery without prophylactic drains.[15]

Drain is associated with some specific complications like: drain site pain and infection, pulling out of omentum through the drain wound during removal of the drain, fluid leakage from drain site for 2-3 days, intestinal obstruction and fecal fistula.[14-15] The present study also observed one case of fecal fistula. This case belongs to drain group. Fecal fistula developed on 13thpostoperative day and after removal of drain which was diagnosed by only fecal discharge from drain site while stich line was healthy. This case underwent conservative management with regular dressing and nutritional improvement. He improved good and was discharged after complete healing of fistula. These observations support that abdominal surgery without drain can avoid these complications.

There was increase length of postoperative hospital stay, and rate of wound infection and drain related anxiety and post operative complications in drain group in the study.[16-17]

Postoperative fever and chest infection was not a regular feature in the study. Intestinal obstruction, drain site abscess, drain site metastasis, abdominal wall cellulitis is not observed in either group.

Even several well-constructed prospective studies also have failed to show any benefit from surgically placed prophylactic drainage in patient after exploratory laparotomy due to peptic ulcer perforation simple acute and complicated appendicitis, ileal perforation repair and intestinal obstruction.**My study favouring, towards, no drain concept. Prophylactic intra peritoneal drains are not providing any additional advantages in patient management, rather they are the tool of multiple complications**.

CONCLUSION:

The observation of this study suggests that prophylactic drain placement after exploratory laparotomyis not necessary, as it does not offer any additional benefit. Moreover, it increases length of hospital stay ,anxiety of patient, postoperative complication like drain site infection ,drain site excoriation, drain site pain.

REFERENCES:

1. Kumar M, Yang SB, Jaiswal VK, Shah JN, Shreshtha M, Gongal R. Is prophylactic placement of drains necessary after subtotal gastrectomy? World J Gastroenterol.2007;13(27):3738-41.
2. Billroth T. Translated by Dent CT. Clinical Surgery. London: The New Sydenham Society; 1881.
3. Delbert P. Recherchesexperimentellesur la lavage au peritoneum. Ann Gynekol Obstet. 1889; 32:165-97.
4. Conlon KC, Labow D, Leung D, Smith A, Jarnagin W, Coit DG, et al. Prospective randomized clinical trial of the value of intra peritoneal drainage after pancreatic resection. Ann Surg. 2001;234:487-93. Discussion: 493-94.
5. Alvarez Uslar R, Molina H, Torres O, Cancino A. Total gastrectomy with or without abdominal drains. A prospective randomized trial.Rev EspEnferm Dig. 2005;97:562-69.
6. Tait L. Method of cleansing the peritoneum. Brit Gynecol J. 1887;3:185-87.
7. 40) Dougherty SH, Simmons RL. The biology and practice of surgical drains. Part II. CurrProbl Surg. 1992;29:633-730.
8. 41)Mawalla B, Mshana SE, Chalya PL, Imirzalioglu C, Mahalu W. Predictors of surgical infections among patients undergoing major surgery at Bugando Medical Centre in Northwestern Tanzania. BMC Surgery.2011;11:21.
9. 42)Shahane V, Bhawal S, Lele U. Surgical site infections: A one year prospective study in a tertiary care center. International Journal of Health Sciences, Qassim University.2012;6 (1):79-84.
10. 43)Levy M. Intra peritoneal drainage. Am J Surg. 1984;147:309-14.
11. 44)Dougherty SH, Simmons RL. The biology and practice of surgical drains.Part 1.CurrProbl Surg. 1992;29:559-623.
12. 45)Pai D, Sharma A, Kanungo R, Jagdish S, Gupta A. Role of abdominal drains in perforated duodenal ulcer patients: a prospective controlled study. Aust N Z J Surg. 1999;69:210-13.
13. 46)Stone HH, Hooper CA, Millikan WJ. Abdominal drainage following appendectomy and cholecystectomy.Ann Surg. 1978;187:606–12.
14. 47)Magarey CJ, Chant ADB, Rickford CRK, et al. Peritoneal drainage and systemic antibiotics after appendectomy. Lancet. 1971;2:179–82.
15. 48)Haller JA, Shaker IJ, Donahoo JS, et al. Peritoneal drainage versus non-drainage for generalized peritonitis from ruptured appendicitis in children: a prospective study. Ann Surg. 1973;177:595–600.
16. 49)Danadapat MC, Panda C. A perforated appendix: should we drain? J Indian Med Assoc. 1992;90:147–
17. 50)Sagar PM, Couse N, Kerin M, May J, Mac Fie J. Randomized trial of drainage of colorectal anastomosis. Br J Surg. 1993;80:769-71