Original Article

Do Post Operative Drains after Emergency Laparotomy Prevent Deep Surgical Site Infection

Post Operative Drains after Laparotomy

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ABSTRACT

Objective: To compare the frequency of deep surgical site infection in patients undergoing emergency laparotomy with and without postoperative drains in a tertiary care hospital.

Study Design: Randomized control trial study.

Place and Duration of Study: This study was conducted at the Surgical Ward-2, JPMC, Karachi from January 2015 to January 2016.

Materials and Methods: Seven hundred and sixty two patients undergoing emergency laparotomy with age from 15-60 years, due to perforated appendix, tuberculosis, typhoid determined history, clinical examination and erect abdominal X ray were randomized into two groups i.e. with and without post-operative drains. Rate of deep surgical site infection on 3rd & 7th day was measured as outcome.

Results: The mean age of the patients was 28.92±6.246 years with 330 (43.3%) were female while rest 432 (56.7%) were male. Deep surgical site infection on 3rd day was 7.2% in patients with post-operative drains while 8.1% in patients without post-operative drains. Similarly on day 7, deep surgical site infection was 6.3% in patients with post-operative drains as compared with 8.1% in patients without post-operative drains. Differences were statistically non-significant.

Conclusion: It is concluded that there is no difference in frequency of developing deep surgical site infection on 3rd day and 7th whether you use post-operative drains after emergency laparotomy or not. So we accept the null hypothesis and conclude the use of post-operative drains is not associated with deep surgical site infection on 3rd and 7th day.

Key Words: Deep surgical site infection, Emergency laparotomy, Postoperative drains, Peritonitis.

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INTRODUCTION

Prophylactic drainage of the peritoneal cavity after gastro-intestinal (GI) surgery has been used since time immemorial, with the dictum of Lawson Tait, the 19th century British surgeon, "when in doubt, drain", well known.[1-3] Emergency laparotomy is a common procedure in our settings. To drain or not to drain has been a dilemma. Postoperative drains help the surgeon not only to detect anastomosis leakage early but also reduce postoperative adhesions. But on the other hand, drains are associated with deep surgical site infection (DSSI).[4,5] Deep surgical site infection is among common morbidities ranging from delayed healing to systemic sepsis having high impact on the economy and health care resources[6] due to increased length of stay.[7] In a Pakistani study conducted in tertiary care hospital, the overall rate of surgical site infection came out 13%[8], much higher than other developed countries like 1.9% in USA.[6]

The available evidence is lacking consensus regarding use of post operative drainage in GI procedures. In a study incidence of DSSI was significantly higher in patients who received a drain (31% vs. 9%, p = 0.001).[9] But in another study there came out statistically non-significant difference in the rate of DSSI based on the presence or absence of an intra-abdominal drain after laparotomy (17 vs 18%, P=0.88).[10] Similarly in a third study one drain placement was found as good as the two drain placement.[1] In a retrospective review to determine safety and effectiveness of routine drainage and nondrainage, no significant difference in mean time for return of bowel function (3.8 vs 4.0 days; P = .6), rate of surgical site infection (63% vs 70%; P = .39), wound dehiscence (36% vs 27%; P = .27), anastomotic leak (2.5% vs 1.5%; P = .27), enterocutaneous fistula formation (10% vs 6.1%; P = .40), intra-abdominal abscess formation (4% vs 9%; P = .18), or mean length of hospital stay (22 vs 19 days; P = .26) was observed.[11] Deep surgical site infections pose a major threat in all surgical interventions. Abdominal infections are common in our setting because of lack of implementation of standardized protocols for infection control. Gut leakage and post-operative infected

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secretions lead to deep infections and abscess formation. Placement of intra-abdominal drains has been a practice in our settings conventionally. The evidence of its benefit is contradictory as explained earlier. Current study is to explore the better practice regarding placement of drain in term of lower rate of DSSI. DSSI is a frequent cause of prolonged hospital stay in our already burdened teaching hospitals. Results of this study will help patients achieve health early and hospital managers may get reduction in bed occupancy rate.

MATERIALS AND METHODS

This randomized control trial study was carried out at Department of Surgery Ward-2, JPMC, Karachi, over a period of one year (Jan 2015 to Jan 2016). Seven hundred and sixty two patients undergoing emergency laparotomy with age from 15-60 years, due to perforated appendix, tuberculosis, typhoid determined history, clinical examination and erect abdominal X ray were randomized into two groups i.e. with intra-abdominal drains and without post-operative drains. Patients will be followed post operatively at 3rd day and 7th day for presence of deep surgical site infection by researcher himself. The data was analysed in SPSS-17. Chi square test of homogeneity will be applied to determine statistical difference in both groups regarding rate of DSSI on 3rd and 7th post-operative day. A value of $p < 0.05$ will be considered as significant.

RESULTS

There were 330 (43.3%) were female while rest 432 (56.7%) were male patients. Seven hundred and sixteen (94%) patients were below 40 years while rest of 46 (6%) patients were either 40 or above 40 years of their age with mean age of the patients were 28.92±6.246 ranging from 21 to 59 years. Five hundred and thirty eight 538 (70.6%) patients stayed in hospital less than five days while 224 (29.4%) patients stayed in hospital five and more than five days. Their hospital stay was between 2 to 9 days with mean of 5.01±1.58 days (Table 1).

Table No.1: Demographic information of the patients

Variable	No.	%
Gender		
Male	330	43.3
Female	432	56.7
Age (years)		
<40	716	94.0
≥40	46	6.0
Hospital stay (days)		
<5	538	70.6
≥5	224	29.4

Among 762 patients, 102 (13.4%) patients have deep surgical site infection on 3rd day while 55 (7.2%) patients showed up with deep surgical site infection on 7th day of operation. Deep surgical site infection on 3rd day was 7.2% with post-operative drains while 8.1% without post-operative drains. Difference was statistically non-significant. Similarly on day 7, deep surgical site infection was 6.3% in patients with post-operative drains as compared with 8.1% in patients without post-operative drains. (Table 2)

Table No.2: Comparison of surgical site infection on 3rd and 7th day

SSI	Post-operative drains	Without post-operative drains
3rd day		
Yes	55 (7.2%)	64 (8.1%)
No	707 (92.8%)	698 (91.9%)
7th day		
Yes	47 (6.3%)	64 (8.1%)
No	715 (93.7%)	698 (91.9%)

P>0.05

DISCUSSION

Deep surgical site infection (DSSI) is among common morbidities ranging from delayed healing to systemic sepsis having high impact on the economy and health care resources[6] due to increased length of stay.[7] In a Pakistani study conducted in tertiary care hospital, generally the rate of SSI was 13%[8], much higher than other developed countries like 1.9% in USA.[6] The available evidence is lacking consensus regarding use of post operative drainage in GI procedures. In a previous study incidence of DSSI was significantly higher in patients who received a drain (31% vs. 9%, p = 0.001).[3]

In our study, deep surgical site infection on 3rd day was 7.2% with post-operative drains while 8.1% without post-operative drains. The difference was statistically non-significant (Table 2). We may conclude that there is no difference in frequency of developing deep surgical site infection on 3rd day whether you use post-operative drains after emergency laparotomy or not. Similarly on day 7, deep surgical site infection was 6.3% with post-operative drains as compared with 8.1% without post-operative drains. The difference was statistically non-significant (Table 2). We may conclude that there is no difference in frequency of developing deep surgical site infection on 7th day whether you use post-operative drains after emergency laparotomy or not.

CONCLUSION

It is concluded that there is no difference in frequency of developing deep surgical site infection on 3rd day and 7th whether the use post-operative drains after

emergency laparotomy or not and the use of post-operative drains is not associated with deep surgical site infection on 3rd and 7th day.

Author's Contribution:

Concept & Design of Study:	Dileep Kumar
Drafting:	Dileep Kumar, Rubina Bashir
Data Analysis:	Dileep Kumar
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