Original Article

To Compare the Frequency of Deep Surgical Wound Infection in Patients Undergoing Laparotomy With or Without Post-Operative Drain

Laparotomy of Surgical Wound With or Without Post-Operative Drain

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ABSTRACT

Objective: To examine the frequency of deep surgical wound infection in patients underwent laparotomy procedure with or without post-operative drain.

Study Design: Comparative/observational

Place and Duration of Study: This study was conducted at the Department of Surgery Unit-1, Sandeman Provincial Civil Hospital, Quetta from January 2017 to June 2018.

Materials and Methods: One hundred and forty patients of both genders with ages 15 to 60 years whom were received laparotomy treatment due to intra-abdominal infection or complicated appendicitis were included in this study. Patient's medical history, age, sex and residency were recorded after taking informed consent. All the patients were divided into two groups, Group I contained 70 patients and received post-operative drain and Group II contains 70 patients and received laparotomy without drain. Deep surgical wound infection was examined at 7th day after surgery and compare between both groups.

Results: Ninety (64.28%) patients 43 in Group I and 47 in Group II were males and 50 (35.72%) patients 27 in Group I and 23 in Group II were females. In Group I and II 25 and 27 patients were ages 15 to 30 years, 30 and 28 patients had ages 36 to 45 years, 15 and 15 patients were ages between 46 to 60 years. 8 (11.43%) patients in Group I and 10 (14.29%) patients had deep surgical infection within 1 week after surgery. Statistically there is no significant difference between the both groups ($p>0.356$)

Conclusion: There is no difference in developing deep surgical site infection in patients undergoing laparotomy with drain or without drain placement.

Key Words: Emergency laparotomy, Deep surgical site infection, PO Drain placement.

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INTRODUCTION

Post-operative drainage procedure of the abdominal cavity after surgical incision of abdomen (laparotomy) has been performing since from many decades. As per the British Surgeon Law Tait,[1] when in doubt, surgical drain is very useful to clear the doubt.[2,3] Now a days, a surgical incision into the abdominal cavity (laparotomy) procedure/treatment is commonly performing in surgical departments,but it is very difficult for surgeons to choose the post-operative wound irrigation/drains procedure due to the risk of increasing surgical site infections. Post-operative drains can helps the surgeons to diagnose the infection and to lessen the morbidity, but post-operative drains/wound irrigation can cause the deep surgical site infections (DSSIs).[4,5] Deep surgical site infections is the most common morbidity found in patients who has treated with laparotomy treatment and it can cause the delay in healing wound, increase in infections, increase in treatment cost and time loss of expertise due to the long stay at hospital.[6,7]

In Pakistan, many studies have been conducted to evaluate the frequency of DSSIs and the results shows that rate of surgical site infection (SSIs) are 13%,[8] and these results are higher than the western countries.[6] In USA the SSIs rate is 1.9%.

Recently, many of international researches regarding DSSIs resulted 14.5% to 25%.[9,10] Many other researches shows that an increase duration of hospital stay of patients are 6 to 25 days due to the DSSIs.[11] In Germany, approximately one million extra days of hospital stay and an extra cost of approx three billion/year were estimated due to post-operative

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surgical site infections.[12] DSSIs cause the considerable alarming in all surgical intercession. Abdominal infections are the most frequent morbidities found in Pakistan due to the lack of better techniques and medication to control the rate of surgical site infections, intestinal leakage and post-operative adhesion and it may cause to increase the ratio of DSSIs.

MATERIALS AND METHODS

This comparative/observational study was conducted at Department of Surgery Unit-1, Sandeman Provincial Civil Hospital, Quetta from 1st January 2017 to 30th June 2018. One hundred and forty patients of both genders with ages 15 to 60 years whom were received laparotomy treatment due to intra-abdominal infection or complicated appendicitis were included in this study. Patient's medical history, age, sex and residency was recorded after taking informed consent. Patients with suspected pancreatitis, diabetics, chronic liver disease, Immune compromised, or having history of hypersensitivity reactions or known allergy to latex were excluded from the study. All the patients were divided into two groups, Group I contains 70 patients and received post-operative drain and Group II contains 70 patients and received laparotomy without drain. Deep surgical wound infections were examined at 7th day after surgery and compare the results of both groups. Data was analyzed by SPSS 21. P-value <0.05 was considered as significant.

RESULTS

Ninety 90 (64.28%) patients 43 (61.43%) in Group I and 47 (67.14%) in Group II were males and 50 (35.72%) patients 27 (38.57%) in Group I and 23 (32.86%) in Group II were females. In Group I and II 25 (35.71%) and 27 (38.57%) patients were ages 15 to 30 years, 30 (42.86%) and 28 (40%) patients had ages 36 to 45 years, 15 (21.43%) and 15 (21.43%) patients were ages between 46 to 60 years. 80 patients had rural residency in which 38 (54.28%) patients in Group I and 42 (60%) patients in Group II while 60 patients had urban residency (32 in Group I, 28 in Group II) [Table 1].

Table No.1: Demographic information of the patients

Variable	Group I	Group II
Gender		
Male	43 (61.43%)	47 (67.14%)
Female	27 (38.57%)	23 (32.86%)
Age (years)		
15 – 30	25 (35.71%)	27 (38.57%)
31 – 45	30 (42.86%)	28 (40%)
46 – 60	15 (21.43%)	15 (21.43%)
Residency		
Rural	38 (54.28%)	42 (60%)
Urban	32 (45.71%)	28 (40%)

p-value>0.05

Mean hospital stay in Group I was 7.32±4.61 days and in Group II it was 6.45±3.85 days respectively. 8 (11.43%) patients in Group I and 10 (14.29%) patients had deep surgical infection within 1 week after surgery. The difference was not statistically significant p-value 0.356 (Table 2).

Table No.2: Mean hospital stay and frequency of deep surgical site infection

Variable	Group I	Group II
Mean hospital stay (days)	7.32±4.61	6.45±3.85
Deep surgical site infection		
Yes	8 (11.43%)	10 (14.29%)
No	62 (88.57%)	60 (85.71%)

P-value 0.356

DISCUSSION

Deep surgical site infection is the world most common post-operative complication found in surgical centers. Several of studies illustrated that the rate of surgical site infection 14 to 25 percent.[9,13] In present study total one hundred and forty patients whom were undergoing laparotomy treatment due to intra-abdominal cavity and other perforated infections were included and all of them were equally divided 70 patients in each group. Group I received laparotomy with post-operative drain and Group II received no drain placement. We found that there were 90 (64.29%) patients were male while 35.71% patients were females. Several previous studies regarding laparotomy reported that the male patient's population was high as compared to females.60 to 80%.[14-16]

In our study overall 37.14% patients Group I and II 25 (35.71%) and 27 (38.57%) patients were ages 15 to 30 years and 41.43% patients 30 (42.86%) and 28 (40%) patients were ages 31 to 45 years. A study conducted by Atif et al[17] regarding laparotomy with post-operative drain and no drain placement in which 400 patients were included with mean age of 38.92±6.246 years and 229(57.2%) male patients. Another study shows similarity to our study in which majority of patients were ages between 20 to 40 years.[18]

In present study the overall deep surgical site infection rate was 12.86%. These results were similar to some other studies conducted regarding prevalence of deep surgical site infection in patients received laparotomy with post-operative drain and no drain placement 10 to 15%.[19-20] In our study, we found no significant difference regarding deep surgical site infection whether post-operative drain placement or without placement of drain 8 (11.43%) patients in Group I and 10 (14.29%) patients had deep surgical infection within 1 week after surgery. The difference was not statistically significant p-value 0.356. Many of studies

shows similarity to our study in which no statistical significant difference found in developing deep surgical site infection in patients drain was placed or not placed (P>0.05).[21,22] But in contrast some of studies demonstrated that the rate of surgical site infection was high in patients who receive post-operative drain as compared to without drain placement.[23,24] WHO developed guidelines for the prevention of development of SSI based on the available literature.[10] It was seen that some low quality evidence is available regarding the use of prolonged antibiotic prophylaxis in patients with placement of drain. It was seen that prolong use of antibiotic in presence of a wound drain has neither benefit nor harm in reducing SSI when compared to per operative prophylaxis alone (OR: 0.79; 95% CI: 0.53–1.20).[24]

Thus the available evidence clearly suggests that drain can be used safely in the surgery and can play a role of friend for the surgeons for early detection of any leakage or fluid accumulation so that immediate step can be taken to rectify the condition.

CONCLUSION

Post-operative drain placement is a safe and effective approach with no risk of increasing deep surgical site infection. We found no difference in developing deep surgical site infection in patients undergoing laparotomy with drain or without drain placement.

Author's Contribution:

Concept & Design of Study:	Ahmad Shah
Drafting:	Mohammad Ishaq Durani
Data Analysis:	Samina Karim
Revisiting Critically:	Ahmad Shah, Mohammad Ishaq Durani
Final Approval of version:	Ahmad Shah

Conflict of Interest: The study has no conflict of interest to declare by any author.

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