

ORIGINAL ARTICLE

Prevalence of Wound Infection in Patients Undergoing Elective or Emergency Abdominal Surgery

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ABSTRACT

Objective: To compare the surgical wound infection in patients undergoing elective or emergency abdominal surgeries.

Study Design: Comparative study

Place & Duration of Study: Study was conducted at surgery department of Divisional Headquarter Teaching hospital Mirpur Azad Kashmir for eighteen months duration from June 2019 to November 2020.

Materials and Methods: 150 patients of both genders with ages 15 to 65 years who 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 A contained 75 patients (Elective) and Group B contains 75 patients (emergency) received laparotomy. Deep surgical wound infection was examined at the 7th day after surgery and compared between both groups.

Results: Ninety eight (65.3%) patients 49 in each group were males and 52 (34.7%) patients 26 in each group were females. In Group A and B 27 and 29 patients were ages 15 to 30 years, 33 and 31 patients had ages 36 to 45 years, 15 and 15 patients were ages between 46 to 60 years. 10 (13.3%) patients in Group A and 12 (16%) patients in group B had deep surgical infection within 1 week after surgery. Statistically there is no significant difference between the both groups ($p > 0.356$)

Conclusion: It is concluded that the frequency of wound infection was high in emergency abdominal surgeries as compared to patients undergoing elective surgery, but the difference was not statistically significant.

Keywords: Emergency laparotomy, Deep surgical site infection, PO Drain placement

INTRODUCTION

The WHO states in the surgical site infection prevention guideline.[1] Surgical site infection (SSI) is among the most common health-care-associated infections in developing countries. The occurrence of SSI causes great pain to patients, prolongs the length of hospital stay, and causes expensive hospitalization cost.[2,3]

Current studies have found that the incidence of SSI after abdominal surgery ranges from 1.2 to 5.2%[4-6]. The incidence of SSI is much higher in patients undergoing emergency abdominal surgery (EAS) than in elective surgery[7,8]. A cross-sectional study in the United States has shown that the incidence of incisional SSI in EAS patients is 6.7%, however, the respective incidence and proportion of drug-resistant bacteria in China are higher[9,10]. In recent years, more patients undergo EAS with the rising number of emergency cases, patient management is more centralized, and the prevention of SSI has become more important[11]. However, there are limited studies on SSI after EAS in China. Therefore, it is important to obtain relevant data about SSI after EAS in China and provide a basis for its prevention.

Surgical site infection (SSI) is defined by the Centers for Disease Control and Prevention as a wound infection that occurs within 30 days of an operative procedure or within a year if an implant is left in place and the infection is thought to be secondary to surgery.[12] It is

one of the most common health-care-associated infections, occurring following 1%–3% of all surgical procedures. The rates of SSI are much higher with abdominal surgery than with other types of surgery, with several prospective studies indicating an incidence of 15%–25% depending on the level of contamination.[13-16]

Surgical site infection is preventable and is associated with high morbidity and mortality. In addition to the devastating impact on the patient's course of treatment, it is associated with prolonged length of hospital stay and higher costs.[17,19] Numerous risk factors may contribute to the development of SSI, with the most recognized factors being these incorporated in the centers for Disease Control and Prevention and National Nosocomial Infections Surveillance System SSI risk index, including wound classification, American Society of Anesthesiologists (ASA) score and duration of the operation.[20]

MATERIALS AND METHODS

This comparative/observational study was conducted at surgery department of Divisional Headquarter Teaching hospital Mirpur Azad Kashmir for eighteen months duration from June 2019 to November 2020. One hundred and fifty 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

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reactions or known allergy to latex were excluded from the study. All the patients were divided into two groups, Group A contains 75 patients and received post-operative drain and Group B contained 75 patients and received laparotomy without drain. Deep surgical wound infections were examined at the 7th day after surgery and compared the results of both groups. Data was analyzed by SPSS 21. P-value <0.05 was considered as significant.

RESULTS

Ninety eight (65.3%) patients 49 in each group were males and 52 (34.7%) patients 26 in each group were females. In Group A and B 27 (36%) and 29 (38.7%) patients were ages 15 to 30 years, 33 (44%) and 31 (41.3%) patients had ages 36 to 45 years, 15 (20%) and 15 (20%) patients were ages between 46 to 60 years. 85 patients had rural residency in which 42 (56%) patients in Group A and 43 (57.3%) patients in Group B while 65 patients had urban residency (33 in Group A, 32 in Group B) [Table 1]. Mean hospital stay in Group A was 8.14 ± 6.55 days and in Group B it was 7.85 ± 9.66 days respectively. 10 (13.3%) patients in Group A and 12 (16%) patients in group B had deep surgical infection within 1 week after surgery. Statistically there is no significant difference between the both groups ($p > 0.356$) (Table 2).

Table 1: Demographic information of the patients

Variable	Group A	Group B
Gender		
Male	49 (65.3%)	49 (65.3%)
Female	2 (34.7%)	26 (34.7%)
Age (years)		
15 – 30	27 (36%)	29 (38.7%)
31 – 45	33 (44%)	31 (41.3%)
46 – 60	15 (20%)	15 (20%)
Residency		
Rural	42 (56%)	43 (57.3%)
Urban	33 (44%)	32 (42.7%)

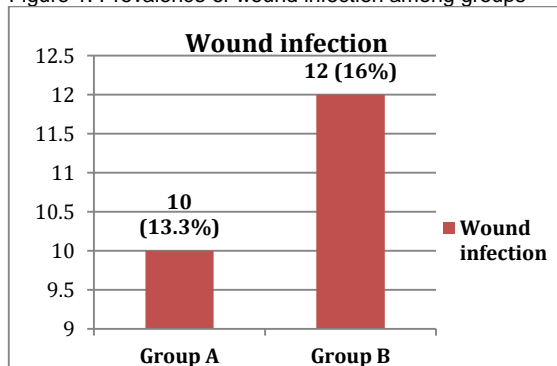
p-value > 0.05

Table 2: Mean hospital stay and frequency of deep surgical site infection

Variable	Group A	Group B
Mean hospital stay (days)	8.14 ± 6.55	7.85 ± 9.66
Deep wound infection		
Yes	10 (13.3%)	12 (16%)
No	65 (86.7%)	63 (84%)

P-value 0.356

Figure 1: Prevalence of wound infection among groups



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 7 to 33 percent.[21,22] In present study total one hundred and fifty patients whom were undergoing laparotomy treatment due to intra-abdominal cavity and other perforated infections were included and all of them were equally divided 75 patients in each group. Group A received laparotomy with post-operative drain and Group B received no drain placement. We found that there were 98 (65.3%) patients were male while 52 (34.7%) patients were females. Several previous studies regarding laparotomy reported that the male patient's population was high as compared to females.60 to 80%.[23,24]

In our study Group A and B 27 (36%) and 29 (38.7%) patients were ages 15 to 30 years, 33 (44%) and 31 (41.3%) patients had ages 36 to 45 years, 15 (20%) and 15 (20%) patients were ages between 46 to 60 years. Our findings were comparable to the previous studies in which majority of the patients were aged between 15-35 years of age.[25,26]

In present study the overall deep surgical site infection rate was 14.7%. 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 17%.[21,27] In our study, we found no significant difference regarding deep surgical site infection whether post-operative drain placement or without placement of drain 10 (13.3%) patients in Group A and in Group B 12 (16%) 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 ($P > 0.05$).[24,28] 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.[29] WHO developed guidelines for the prevention of development of SSI based on the available literature. 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).

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

We concluded that the frequency of wound infection was high in emergency abdominal surgeries as compared to patients undergoing elective surgery, but the difference was not statistically significant.

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