Original Article

Determine the Frequency of Surgical Wound Infection in Patients Undergoing Elective and Emergency Abdominal Surgery

Surgical Wound Infection in Elective and Emergency Surgery

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ABSTRACT

Objective: To examine the incidence of surgical wound infection in patients undergoing elective and emergency abdominal surgeries.

Study Design: Prospective/observational study

Place and Duration of Study: This study was conducted at the Department of Surgery, Bacha Khan Medical complex Swabi during from April 2019 to Dec 2019.

Materials and Methods: Three hundred and twenty patients of both genders were underwent abdominal surgeries. Patient's ages were ranging from 5 to 65 years. Patients detailed demographics including age, sex, BMI, type of surgery, comorbidities were recorded after informed consent. Incidence of post-operative wound infection was examined and compare the findings between elective and emergency surgeries.

Results: One hundred and ninety (59.38%) were males while 130 (40.62%) were females. 64 (20%) patients were ages ≤20 years, 160 (50%) were ages 21 to 40 years, 70 (23.75%) were ages 41 to 60 years and 20 (6.25%) had ages above 60 years. 120 (37.5%) patients were underwent elective and 200 (62.5%) underwent emergency surgeries. Overall post-operative wound infection was found in 52 (16.25%) patients while 268 (83.75%) patients had no wound infection. In elective surgeries 8 (6.67%) patients developed wound infection while in emergency 44 (22%) developed wound infection, a significant difference was observed between elective and emergency abdominal surgeries with p-value 0.012.

Conclusion: The frequency of wound infection in our settings was high in patients received elective and emergency abdominal surgeries. Moreover, rate of surgical wound infection was high in emergency surgeries as compared to elective.

Key Words: Abdominal surgery, Elective, Emergency, Post-operative wound infection

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INTRODUCTION

Postoperative wound infection, otherwise called surgical site infections (SSIs), confound the recuperation course of numerous patients. As characterized by the Centers for Disease Control and Prevention (CDC), these contaminations regularly happen inside 30 days of an activity at the site or part of the body where the medical procedure occurred, or inside a year if an embed is left set up and the disease is believed to be optional to medical procedure.[1-3]

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Bacterial colonization on the patient's skin and nutritious and genital tract are the chief contributing sources that lead to SSIs.[4] The living being regularly disconnected is Staphylococcus aureus.[5] Exogenous sources, for example, penetrates in clean method and working room gear may contribute, but significantly less often than endogenous greenery. Microscopic organisms inside the tissue or organ space frustrate the postoperative mending forms, and can prompt anastomotic releases, wound dehiscence, and shallow incisional contaminations.[6]

The paces of SSI are a lot higher with stomach medical procedure than with different sorts of medical procedure, with a few planned examinations showing a frequency of 15%–25% relying upon the degree of tainting.[7,8] Careful site disease is preventable and is related with high dismalness and mortality. Notwithstanding the overwhelming effect on the patient's course of treatment, it is related with delayed length of medical clinic remain and greater expenses.[9]

Different hazard factors for SSI have been recognized after some time and would all be able to be accumulated inside at least one of the three significant

determinants of SSI: bacterial components, nearby twisted variables, and patient elements. Bacterial variables remember harmfulness and bacterial burden for the careful site. Length of preoperative remains, remote site contamination at the hour of medical procedure, and term of the methodology have likewise been related with an expanded bacterial burden and SSI rate.[10] Nearby twisted components are identified with the intrusiveness of an activity and to explicit specialist's practices and careful strategy. Great careful strategy while overseeing tissues (neighborhood twisted) in the most fitting way and utilizing stitches, channels, and outside bodies just with sufficient sign is the most ideal approach to keep away from SSIs.[11] The present study was conducted aimed to examine the incidence of wound infection in patients undergoing elective and emergency abdominal surgeries.

MATERIALS AND METHODS

This prospective/observational study was conducted at Department of Surgery Bacha Khan Medical complex Swabi from 1st April 2019 to 31st Dec 2019. A total 320 patients of both genders undergoing elective and emergency abdominal surgeries such as appendectomy, hernia repair, pancreatitis, laparotomy, colon injuries, cholecystectomy and urethroplasty were included in this study. Patient's ages were ranging from 5 to 65 years. Patient's detailed demographics including age, sex, BMI, type of surgery (elective and emergency), co-morbidities such as diabetes mellitus, anemia, hypertension, and smoking were recorded after informed consent. Patients with gynecological disorders, surgeries other than abdominal, patients with liver cancer and those with no consent were excluded. All the patients were received elective or emergency surgery whether it was laparoscopic or open procedure. Post-operative wound infection was examined at post-operative 1 week and at 1 month. Types of wound infection such as superficial and deep surgical site infection were examined. Compare the findings between elective and emergency surgeries. Data was analyzed by SPSS 24. Chi-square test was applied to compare the frequency of wound infection between elective and emergency surgeries. P-value <0.05 was taken as statistically significant.

RESULTS

There were 190 (59.38%) were males while 130 (40.62%) were females. 64 (20%) patients were ages ≤20 years, 160 (50%) were ages 21 to 40 years, 70 (23.75%) were ages 41 to 60 years and 20 (6.25%) had ages above 60 years. 120 (37.5%) patients were underwent elective and 200 (62.5%) underwent emergency surgeries. Mean BMI of all the patients was 26.25±4.32 kg/m^2. The most common co-morbidity was anemia found in 76 (23.75%) patients followed by diabetes in 60 (18.75%) patients, hypertension in 52 (16.25%) patients and smoking found in 48 (15%) patients respectively (Table 1). Overall post-operative wound infection was found in 52 (16.25%) patients in which 36 (11.25%) developed superficial while 16 (5%) developed deep surgical site infection while 268 (83.75%) patients had no wound infection (Fig. 1). According to the comparison of postoperative wound infection between elective and emergency surgeries we found that in elective surgeries 8 (6.67%) patients developed wound infection while in emergency 44 (22%) developed wound infection, a significant difference was observed between elective and emergency abdominal surgeries with p-value 0.012 (Table 2).

Table No.1: Demographics of all the patients

Variables	No.	%
Gender		
Male	190	59.38
Female	130	40.62
Age (Years)		
<20	64	20.0
21 to 40	160	50.0
41 to 60	76	23.75
Above 60	20	6.25
Surgery type		
Elective	120	37.50
Emergency	200	62.50
Co-morbidities		
Anemia	76	23.75
Diabetes	60	18.75
Hypertension	52	16.25
Smoking	48	15.0
BMI (kg/m^2)	26.25±4.32	

Table No.2: Comparison of wound infection between elective and emergency abdominal surgeries

Post-operative wound infection	Elective	Emergency	P-value
Yes	4 (6.67%)	22 (22%)	0.012
No	56(93.33%)	78 (78%)	

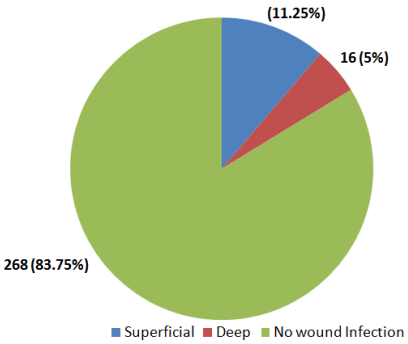

Figure No.. 1: Incidence of post-operative wound infection among all the patients

DISCUSSION

Abdominal surgeries such as appendectomy, gastrointestinal, exploration laparotomy, pancreatitis, and cholecystectomy were the most common surgeries performing in any surgical settings. Post-operative wound infection is the most frequency post-operative complication in abdominal surgeries and it can lead to increase hospital stay, cost and impacted worsened in patients.[12,13] In surgical settings elective and emergency surgeries are performing. Patients with critical condition may receive emergency and patients with non-critical condition first received medical treatment than take these patients towards surgical intervention. We performed this study to examine the frequency of post-operative wound infection in patients undergoing elective and emergency abdominal surgeries. In this study total 320 patients received elective or emergency abdominal surgeries during the study period. Male patients were high in numbers 59.38% as compared to female 40.62%. Majority of patients (70%) were ages less than 40 years. These results showed similarity to many of previous studies in which males were predominant as compared to females and accounted 55% to 65% and the average age of patients whom were received abdominal surgeries was 26 years.[14,15]

In present study we found that 120 (37.5%) patients were underwent elective and 200 (62.5%) underwent emergency surgeries. Mean BMI of all the patients was 26.25±4.32 kg/m^2. The most common co-morbidity was anemia found in 76 (23.75%) patients followed by diabetes in 60 (18.75%) patients, hypertension in 52 (16.25%) patients and smoking found in 48 (15%) patients respectively. A study conducted by Alkaaki et al[16] reported that 76.3% patients were underwent elective surgery while 23.7% were underwent emergency surgery and among all the patients diabetes mellitus was the most common co-morbidity reported in 20.8% patients followed by smoking.

We found that the overall incidence of post-operative wound infection reported in 52 (16.25%) patients in which 36 (11.25%) developed superficial while 16 (5%) developed deep surgical site infection while 268 (83.75%) patients had no wound infection. A study conducted by Prashant et al[17] demonstrated that the overall incidence of wound infection was 24% and among elective surgery it was 4% and in emergency surgery in was 44%. Another study conducted by Kumar et al[18] regarding incidence of wound infection in elective and emergency abdominal surgeries and they reported that surgical site infection was observed in 12.5%. Among the 3 types, superficial incision SSI was most prevalent followed by deep incisional SSI and finally by organ/space SSI. Some other previous studies showed similarity to over study findings regarding wound infection in which wound infection reported 15% to 40% patients and superficial infection was the most common surgical site infection.[19,20]

In present study according to the comparison of postoperative wound infection between elective and emergency surgeries we found that in elective surgeries 8 (6.67%) patients developed wound infection while in emergency 44 (22%) developed wound infection, a significant difference was observed between elective and emergency abdominal surgeries with p-value 0.012. These results were similar to the study by Kumar et al[18] in which patients with emergency surgery had high rate of wound infection as compared o elective surgery. A study by Tan et al[21] reported dissimilarity in which elective surgery reported a higher rate of SSIs, 19.40%, as compared with 15.47% in emergency surgery. Nagur et al[22] reported that the incidence of wound infection was high in patients underwent emergency surgery as compared to the elective surgery.

CONCLUSION

The frequency of wound infection in our settings was high in patients received elective and emergency abdominal surgeries. Moreover, rate of surgical wound infection was high in emergency surgeries as compared to elective. Superficial surgical site infection was most common among all the patients.

Author's Contribution:

Concept & Design of Study:	Muhammad Kashif
Drafting:	Jehangir Khan
Data Analysis:	Ziaullah, Muhammad Bilal
Revisiting Critically:	Muhammad Kashif, Jehangir Khan
Final Approval of version:	Muhammad Kashif

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

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