FREQUENCY OF OPERATIVE SITE INFECTION AFTER LAPAROTOMY IN SURGICAL UNIT NAWAZ SHARIF MEDICAL COLLEGE GUJRAT

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ABSTRACT

Background: Postoperative wound infection is a major problem faced by surgeons. **Objective:** To assess the postoperative wound complications after laparotomy. **Subjects and Methods:** This cross sectional study was conducted in Surgical Unit of Nawaz Sharif Medical College and Doctors Hospital, Gujrat, Pakistan from 1st July 2012 to 30th June 2014. 195 patients underwent laparotomy. Cholecystectomy was done in 102 patients and appendicectomy was done in 93 patients. Their wounds were graded by Southampton wound scoring system. The data was entered and analyzed by using SPSS version 16. **Results:** 92.2 % patients has normal healing (grade 0 or I) , minor complications were seen in 6% (grade II or III), 1.5% patients were showing major complications (grade IV or V) during hospital stay. On follow-up in out-patient department, 80.4% patients found to have normal healing (grade 0 or I), 15.2 % patients has minor complications (grade II or III) and 4 % patients has major complications (grade IV or V). During follow up for surgical site infections there was an increase in the grades as compared to their record during hospital stay. **Conclusion:** For the detection of surgical site infection and standardization of the wound, Southampton Wound Scoring System is very useful. Southampton wound scoring can be used for surgical site infection and it may help in the patient, and sterilization protocol improvement.

Key word: Surgical Wound, Southampton Wound Scoring System, Complications.

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INTRODUCTION

Until the middle of the 19th century, most wounds became infected and in cases of extensive infection this resulted in a mortality rate of 70-80%. Since then a number of significant developments have made surgery safer. However, the overall incidence of healthcare associated infections (HAIs) remains high.[1] In 1992, the US Centers for Disease Control (CDC) revised its definition of wound infection, creating the definition surgical site infection (SSI)[2] to prevent confusion between the infection of a surgical incision and the infection of a traumatic wound. Most surgical site infection (SSIs) are superficial, but even so they contribute greatly to the morbidity and mortality associated with surgery.[3,4] Estimating the cost of surgical site infection (SSIs) has proved to be difficult but many studies agree that additional bed occupancy is the most significant factor.[4]

Infection rates in the four surgical classifications (clean, clean-contaminated, contaminated and dirty wounds) have been published in many studies.[5] Before the routine use of prophylactic antibiotics infection rates were 1-2% or less for clean wounds, 6-9% for clean-contaminated wounds, 13-20% for contaminated wounds and about 40% for dirty wounds.[6] Since the introduction of routine prophylactic antibiotic use, infection rates in the most contaminated groups have reduced drastically.[7] There is, however, considerable variation in each class according to the type of surgery being performed.[8]

Postoperative surgical site infections (SSI) are one of the most common complications after laparotomy. Preoperative antibiotic prophylaxis and less invasive procedure strategies have been developed to reduce this burden. Currently about 12% of patients undergoing elective open colorectal procedures develop a surgical site infections (SSI).[9] This is in accordance with the "Hospital in Europe Link for Infection Control through Surveillance"(HELICS) surgical site infections (SSI) statistical report that has reported a similar incidence of SSI.[10] The INSECT multicenter RCT focussing on different strategies for abdominal fascia closure after elective primary midline laparotomy in various surgical indications detected a wound infection rate of 16% as a secondary outcome.[11]

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Though advances have been made in infection control practices, including improved operating room ventilation, sterilization methods, barriers, surgical techniques and availability of antimicrobial prophylaxis, surgical site infections remain an important cause of morbidity and mortality among hospitalized patients.[12] All surgical procedures should be standardized in their management of wound care. The method of assessment of wound infection should be organized and be carried out by an expert junior staff. It is stated that surgical site infection rate after clean surgery gives an appropriate indicator of surgical performance. For this purpose Southampton wound scoring system may be used to identify Good surgical wards.[13]

Surveillance of surgical site infection with feedback of appropriate data to surgeons has been shown to be an important component of strategies to reduce surgical site infection risk.[14]

Table I: Southampton Scoring System

Grade	Appearance
0	Normal healing
I Normal healing with mild bruising or erythema:	
A	Some bruising
B	Considerable bruising
C	Mild erythema
II Erythema plus other signs of inflammation:	
A	At one point
B	Around sutures
C	Along wound
D	Around wound
III Clear or haemoserous discharge:	
A	At one point only (<2cm)
B	Along wound (>2cm)
C	Large volume
D	Prolonged (>3 days)
Major complication IV Pus:	
A	At one point only (<2cm)
B	Along wound (>2cm)
V Deep or severe wound infection with or without tissue breakdown; haematoma requiring aspiration	

The wound grading system used was simplified for the use of analysis.
By using the worst wound score recorded and information about any treatment instituted either in hospital or the community, wounds were regarded in four categories:
(A) normal healing;
(B) minor complication;
(C) wound infection-wounds graded IV or V or wounds treated with antibiotics after discharge from hospital, irrespective of the wound grading given to them by the nurse; and
(D) major haematoma-wound or scrotal haematomas requiring aspiration or evacuation.

A successful surveillance programme includes the use of epidemiologically sound, infections and effective surveillance methods, stratification of SSI rates according to risk factors associated with SSI development and data feedback.[5] The objective of this study was to determine the frequency of the surgical site infection after laparotomy through the Southampton wound scoring system.

SUBJECTS AND METHODS

A cross sectional study on 195 patients of abdominal cases of surgery was carried out, after written consent from patients and approval from ethical committee from 1st July 2012 to 30th June 2014, in Surgical unit of Nawaz Sharif Medical college and Doctors Hospital, Gujrat, Pakistan. The wounds were graded by Southampton wound scoring system.(Table I). Patients were diagnosed on history, examination and necessary investigations. Cholecystectomy was done in 102 patients and appendicectomy was done in 93 patients. Diagnosed patients were admitted for surgery and discharged home after 3-7 days after surgery. Before discharge their wound was graded by Southampton wound scoring system. The patients were then followed up in out patient department after two weeks post operatively and later after 6-8 weeks, or called for in case of any wound complication. Wounds were classified as a) normal healing (grade 0 or grade I); b) minor complication (grade II or grade III); c) wound infection-wounds (graded IV or V) or wounds treated with antibiotics after discharge from hospital irrespective of wound graded during hospital stay; and d) major hematoma-wound requiring aspiration or evacuation. The treatment given was also noted. Data was obtained on a performa and was entered and analyzed by using SPSS version 16.

RESULTS

Total of 195 patients were included in this study who underwent laparotomy. The age range was 5 to 50 years. 125 (64 %) patients were males and 70 (36%) patients were females who were assessed for wound complications. 195 patients were assessed for surgical site infection by Southampton wound scoring system. Out of 195 patients 37 (18.98%) patients were from pediatric

Initially 172 (88.2%) patients were graded as "0",but during follow up this number decreased to 146 (74.8%) patients, while on other hand 8 (4%) patients who were graded as "I" during hospital stay, but their number increased upto 11 (5.6%) patients, 10 (5%) patients were graded as "II" during hospital stay, subsequently 20 (10.2%) patients were found to have grade "II" in follow-up. Similarly; during hospital stay , 2 (1%) patient of grade "III", 1 (0.5%) patient of grade "IV" and 2 (1%) patients of grade "V", on follow up in OPD, 10 (5%) patients were grade "III", 4 (2%) patients were grade "IV" and further 4 (2%) patients were graded as "V" respectively.

During hospital stay 180 (92.2%) patients has normal healing process (grade 0 or I), 12 (6.1%) of grade II or III patients had minor wound complications requiring no further treatment , 1 (0.5%) patient has major complication and treated with antibiotics and 2 (01%) patients required evacuation of their hematoma.

On follow-up of the patients 157 (80.5%) patients found to have normal healing process (grade 0 or I) , 30 (15.3%) patients were having minor complications requiring no further treatment (grade II or III), 4 (2%) patient with major complications were treated with antibiotics according to culture and sensitivity reports and 4 (2%) patients were having wound hematoma requiring evacuation.

Table II: Age distribution of patients. (n=195)

Age group (years)	No. of patients	% age
5-15	37	18.97
16-30	54	27.69
31-50	104	53.33
Total	195	100

Table III : Grades of wound during hospital stay and on follow up(N=195).

Infection	Record of ward (n=195)		On follow up (n=195)	
Grade	No. of patients	%age	No. of patients	% age
0	172	88.2	146	74.8
I	8	4	11	5.6
II	10	5	20	10.2
III	2	1	10	5
IV	1	0.5	4	2
V	2	1	4	2
Total	195	100	195	100

DISCUSSION

In our set-up, if we see the sterilization, operative room conditions, the stuff for the procedure and surgical techniques and postoperative care, the surgical site infections are commonly seen after open laparotomy, when long term follow-up is done. Many times minor complications are ignored or neglected, sorting just for major complications. Southampton Scoring System is easy to imply for classifying surgical site infections. Many of surgical site infections have not affected the long term outcome in terms of wound dehiscence or mortality after laparotomy . Such surgical site infections detected showed suboptimal wound management which has prolonged the problem.

But the time spent on the procedure did affect post operative wound problem. For proper assessment of wound infection a standard formula like Southampton Wound Scoring System is easily understandable. This is the wish of the surgeon with which he wants to improve the outcome of his patients. Proper counseling of the patients for follow-up in out-patient department can improve detection of wound problems and management. The doctors at Basic Health Units can also help in wound problem by transferring information or referring the patient to the same ward, if proper instruction has been written in discharge slips.

Our study showed surgical site infection rate for major complications (grade IV or V) about 4% after laparotomy, which is at moment not bad, may be because of antibiotics prescribed during hospital stay and on discharge on oral antibiotics for 5-7 days. Previous study reported wound infection as

7.3% during 10-14 days hospital stay.[15] Some institution and surgeon has better reported surgical site infection rate of just 1.4% in one study.[16] But there is surgical site infection rate of 11.25% in other study.[16] One institution reported even higher rate of surgical site infection rate of 17% in one series,[10] while others noted about 4.4% infection rate. [17] Ferraz and Bacelar, showed that there is considerable variation in each class according to the type of surgery being performed.[8]

CONCLUSION

We should not discharge the patient earlier but if some patient get discharge home earlier then we should follow properly made protocols of follow-up. As noted we have a relative low complication rate in wound problems as compared to some studies. Strict follow-up protocol in Out Patient Department and patient education can significantly improve care and the surveillance of surgical site infections. Data collection method using the Southampton Wound Scoring System can be marked as Standard for assessment of surgical site infections.

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