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DEEP SURGICAL SITE INFECTIONS;

DETERMINE THE PREVALENCE OF DEEP SURGICAL SITE INFECTIONS (DSSIS) IN PATIENTS TREATED LAPAROTOMY PROCEDURE WITH OR WITHOUT POST-OPERATIVE WOUND IRRIGATION.

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ABSTRACT… Background: A surgical incision in the abdominal cavity (laparotomy surgery) is the most common procedure in surgical departments. Post-operative wound irrigation is very helpful method for surgeons to diagnose the surgical infections and to decrease the length of stay at hospital. **Objectives:** To determine the prevalence of deep surgical site infections in patients treated laparotomy procedure with or without post-operative wound irrigation. **Study Design:** Comparative control trial, observational study. **Setting:** Ghulam Muhammad Mahar Medical College Hospital, Sukkur. **Period:** 1st January 2016 to 31st December 2017. **Material and Methods:** Three hundred and thirty patients of both genders who had treated laparotomy because of intra-abdominal cavity and due to perforated appendix, examined TB, typhoid history, clinical treatments were included. All patients were divided into two groups with or without post-operative wound irrigation to examine the frequency of DSSIs in patients at third and seventh day of laprotomy treatment. **Results:** There were 180 (54.55%) were men and 150 (45.45%) patients were women. 50 (15.15%) patients having ages of <20 years, 110 (33.33%) patients were aged between 20 to 29 years, 130 (39.39%) patients were aged between 30 to 39 years, 25 (7.58%) patients having ages of 40 to 49 years and 15 (4.54%) patients were ages >49 years. Hospital stay of patients was recorded from 2 to 10 days, 237 (71.82%) patients having stay at hospital were 2 to 4 days, 63 (19.09%) patients stay were 5 to 7 days while 30 (9.10%) patients stay were >7 days. Out of all the 330 patients, 47 (14.24%) patients found surgical site infections on 3rd days, 43 (13.03%) found DSSIs on 5th day and 45 (13.64%) patients had deep surgical site infections on 7th day after laparotomy treatment. DSSIs on 3rd days was noted in 23 (6.97%) patients with Postoperative wound irrigation and 24 (7.24%) without PO wound irrigations, 22 (6.67%) found DSSIs with wound irrigations and 21 (6.37%) without wound irrigations, while on 7th day 21 and 24 patients had observed deep surgical site infections after operation. **Conclusion:** There is no major difference observed in prevalence of DSSIs whether performing post operative wound irrigation or do not performing PO wound irrigations after laparotomy procedure. Thus we concluded that the PO wound irrigations is not useful method to decrease the rate of DSSIs on 3rd, 5th and seventh day of after operation.

Key words: Deep Surgical Site Infections, Laprotomy, Post-Operative Wound Irrigation.

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INTRODUCTION

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

In Pakistan, many studies has 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 was estimated due to post-operative surgical site infections.[12] Deep surgical site infections 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 deep surgical site infections.

In our surgical departments, Intra-operative wound irrigation method is commonly used. Current study was carried out to evaluate the prevalence of DSSIs with or without post-operative wound irrigations (POD) and to observe how this procedure is useful to reduce the DSSIs rate.

MATERAILS AND METHODS

This comparative randomised control trial, observational study was carried out at Ghulam Muhammad Mahar Medical College Hospital, Sukkur from 1st January 2016 to 31st December 2017. Three hundred and thirty patients of both genders who had treated laparotomy because of intra-abdominal cavity and due to perforated appendix, TB, typhoid history, clinical treatments were included. All patients were divided into two groups with or without post-operative wound irrigation to examine the frequency of DSSIs in patients at third, 5th and seventh day of laprotomy treatment with ages <20 to 60 years. Patients having other infections, successful appendicitis treatment, 1b day stay at hospital were excluded in this study.

Data was analyzed by SPSS software 17.0. Chi square test was done to examine the difference in both groups with or without post-operative wound irrigations. P-value <0.05 should be considered significantly.

RESULTS

Out of 330 patients, 180 (54.55%) were men and 150 (45.45%) patients were women. 50 (15.15%) patients having ages of <20 years, 110 (33.33%) patients were aged between 20 to 29 years, 130 (39.39%) patients were aged between 30 to 39 years, 25 (7.58%) patients having ages of 40 to 49 years and 15 (4.54%) patients were ages >49 years. Hospital stay of patients was recorded from 2 to 10 days, 237 (71.82%) patients having stay at hospital were 2 to 4 days, 63 (19.09%) patients stay were 5 to 7 days while 30 (9.10%) patients stay were >7 days (Tables-I to IIII).

Out of all the 330 patients, 47 (14.24%) patients found surgical site infections on 3rd days, 43 (13.03%) found DSSIs on 5th day and 45 (13.64%) patients had deep surgical site infections on 7th day after laparotomy treatment. DSSIs on 3rd days was noted in 23 (6.97%) patients with Postoperative wound irrigation and 24 (7.24%) without PO wound irrigations, on fifth day 22 (6.67%) found DSSIs with wound irrigations and 21 (6.37%) without wound irrigations, while on 7th day 21 (6.37%) and 24 (7.24%) patients had observed deep surgical site infections after operation. There is no significant difference between the both groups (P>0,05) [Table-IV].

Sex	No.	%
Men	180	54.55
Women	150	45.45

Table-I. Gender wise distribution

Age (years)	No.	%
<20	50	15.15
20 – 29	110	33.33
30 – 39	130	39.4
40 -49	25	7.58
> 49	15	4.54

Table-II. Age-wise distribution of patients

Hospital stay (days)	No.	%
2 – 4	237	71.82
5 – 7	63	19.09
> 7	30	9.09

Table-III. Hospital stay of patients

DSSI	With PO wound irrigations	Without PO wound irrigations
3rd day		
Found	23 (6.97%)	24 (7.24%)
Not found	307 (93.03%)	306 (92.76%)
5th day		
Found	22 (6.67%)	21 (6.37%)
Not found	308 (93.33%)	307 (93.03%)
5th day		
Found	21 (6.37%)	24 (7.24%)
Not found	309 (93.63%)	306 (92.76%)

Table-IV. Comparison of SSIs on 3rd 5th 7th days

Chi-Square = 7.787 D.f. = 3
P-value = 0.079

DISCUSSION

Deep surgical site infections is the most common morbidity found in patients who has treated with laprotomy treatment and it can cause the delay in healing wound, increase in infections, increase in treatment cost and time loss of expertise[6] due to the long stay at hospital.[7] In Pakistan, many studies has 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%. The present proofs is lacking consensus regarding performing of PO wound irrigation in gastro intestinal method. Previous study shows that DSSIs rate was higher in patients who experienced wound irrigation (31% vs 9%).[3]

In current research we observed, Out of 330 patients, 180 (54.55%) were men and 150 (45.45%) patients were women. 50 (15.15%) patients having ages of <20 years, 110 (33.33%) patients were aged between 20 to 29 years, 130 (39.39%) patients were aged between 30 to 39 years, 25 (7.58%) patients having ages of 40 to 49 years and 15 (4.54%) patients were ages >49 years. Hospital stay of patients was recorded from 2 to 10 days, these results showing similarity to the some other studies and it may cause the delay in healing wound, increase in infections, increase in treatment cost and time loss of expertise.[7] Many other researches shows that an increase duration of hospital stay of patients are 6 to 25 days due to the DSSIs.[11-15] 237 (71.82%) patients having stay at hospital were 2 to 4 days, 63 (19.09%) patients stay were 5 to 7 days while 30 (9.10%) patients stay were >7 days.

In this study, Out of all the 330 patients, 47 (14.24%) patients found surgical site infections on 3rd days, 43 (13.03%) found DSSIs on 5th day and 45 (13.64%) patients had deep surgical site infections on 7th day after laparotomy treatment. DSSIs on 3rd days was noted in 23 (6.97%) patients with Postoperative wound irrigation and 24 (7.24%) without PO wound irrigations, these results were not significant statistically, on fifth day 22 (6.67%) found DSSIs with wound irrigations and 21 (6.37%) without wound irrigations, there is no major difference found, while on 7th day 21 (6.37%) and 24 (7.24%) patients had observed deep surgical site infections after operation. No significant differences in SSI rates were observed between the two groups. The overall SSI rate in this single-centre study was comparable to observations of other recent trials (19.6%).[16-19] From these results we concluded that there is no major difference observed in prevalence of SSIs (surgical site infections) whether you performed PO wound irrigations on 5th and 7th day or not performed.

CONCLUSION

We concluded that there is no major difference observed in prevalence of DSSIs whether performing post operative wound irrigation or do not performing PO wound irrigations after laparotomy procedure. Thus we concluded that the PO wound irrigations is not useful method to decrease the rate of DSSIs on 3rd, 5th and seventh day of after operation.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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1	Shahid Hussain Mirani	Writing of manuscript and compiling results.	
2	Abdul Waheed Khan	Data collection & writing of manuscript.	
3	Ahmad Raza Nsar	Statistical analysis & giodance in writing the manuscript.	