



PROSPECTIVE STUDY OF BURST ABDOMEN AND VARIOUS DETERMINANTS

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ABSTRACT **Background:** Wound dehiscence/burst abdomen is a serious postoperative complication with incidence of 10.0-30.0%, and is of great concern because of risk of evisceration, the need for immediate intervention, and the possibility of repeat dehiscence, higher risk in elderly age group and surgical wound infection. Despite progress made in peri-operative and postoperative care over the past few years, wound dehiscence after abdominal surgery continues to be a challenging complication, which considerably prolongs hospital stay(morbidity) and is associated with mortality rates of 10% to 44%. Wound dehiscence carries with it a list of multiple etiological factors that need evaluation and early intervention to decrease morbidity and mortality. **AIM:** To find various aetiology/risk factors of burst abdomen in patients, admitted in surgical emergency department of LLR hospital, Kanpur **MATERIALS AND METHODS:** This is a prospective study, in which 80 patients of burst abdomen aged more than 18years were studied, which underwent exploratory laparotomies in Department of General surgery, LLR & Associated Hospitals, G.S.V.M. Medical College from January 2021 to October 2022. Various etiological factors were observed like age, sex, post operative discharge, surgical site infection and patients undergoing emergency/elective exploratory laparotomy, aged more than 18 years and primarily operated in Department of General surgery, LLR & Associated Hospitals, G.S.V.M. Medical College and giving consent. **CONCLUSION:** Burst abdomen is a serious sequel of impaired wound healing and our findings were as follows:- Mean age group of presentation was 47.25+ 8.95 years., male preponderance of 76.25% with respect to female of 23.575%, burst abdomen present in 80 cases of emergency laparotomy and none in elective cases, on the basis of discharge 75% cases were having sero sanguineous discharge, the organism most commonly isolated from stitch line was gram negative bacteria i.e. E coli (45%).

KEYWORDS : Burst abdomen, emergency/elective laparotomy, wound infection.

INTRODUCTION

Wound dehiscence/burst abdomen is a serious postoperative complication and of greatest concern because of risk of evisceration, the need for immediate intervention, and the possibility of repeat dehiscence, surgical wound infection and incisional hernia formation. Despite progress made in peri-operative and postoperative care over the past few years, wound dehiscence after abdominal surgery continues to be a challenging complication, which considerably prolongs hospital treatment and is associated with mortality rates of 10% to 44%. Wound dehiscence carries with it a substantial morbidity and mortality.

Patients identified as being high risk may be benefited from close observation and early intervention. If the risk factors can be predicted earlier, their numbers can be decreased and the incidence of burst abdomen will be lowered significantly.

AIM & OBJECTIVES

Aim:

To find various etiology and risk factors of burst abdomen in patients, undergoing emergency and elective exploratory laparotomy.

MATERIAL & METHODS

The present hospital based prospective study was conducted on patients who were operated primarily by exploratory laparotomy and developed burst abdomen as complications in Department of General surgery, LLR & Associated Hospitals, G.S.V.M. Medical College from January 2021 to October 2022.

Ethical Considerations : Approval from the GSVM Medical College, Ethics committee was taken prior to initiation of the study. Informed consent was taken from all participants. The participation in the study was voluntary and the patient was had the right to withdraw from study whenever he/she wishes to do so.

Study Sample : Patients who underwent both emergency or elective abdominal procedure (exploratory laparotomy) and developed postoperative dehiscence during the study period. Only 80

patients(burst abdomen) were taken out of 800 exploratory laparotomy.

Inclusion criteria:

Patients above 18 years of age of either sex, patients consent form for investigation and treatment, all patients who were operated primarily in LLR HOSPITAL.

Exclusion Criteria:

Patients primary operated outside L.L.R. Hospital or who had undergone previous laparotomies for any condition (or had an incisional hernia or burst abdomen), patients less than 18years of age, patients not giving consents.

Statistical Analysis

Microsoft Excel was used in creating the database and producing graphs, while the data was analysed using the Statistical Package for the Social Sciences (SPSS) version 23 for Windows. Mean and standard deviation (\pm SD) was used to describe quantitative data meeting normal distribution. Non-normal distribution or continuous variables was compared using Pearson's Chi square test or fisher's exact test and for means the student "t" test was used. The level of significance was taken as $P < 0.05$.

OBSERVATIONS

During the study period from January 2021 to October 2022, 800 patients of exploratory laparotomy were included from out of which 80 patient developed burst abdomen. The majority 26 (32.5%) of patients were belongings between 51-60 years of age, followed by 21 (26.25%) of patients more than 60 years of age, and only 6 (7.5%) of patients were belonging to less than or equal to 30 years of age.

Table 1: Distribution of the cases on the basis of their age

Age in years	No. of cases (n=80)	Percentage
18-30	6	7.5
31-40	8	10
41-50	19	23.75
51-60	26	32.5

>60	21	26.25
Mean±SD	47.25±8.95 (years)	

Figure 1: Distribution of the cases on the basis of their age

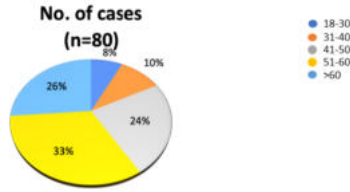


Table 2 : Distribution of the cases on the basis of their Gender

Gender	No. of cases (n=80)	Percentage
Male	61	76.25
Female	19	23.75

The majority 76.25% of patients were male and 23.75% were female.

Table 3: burst abdomen in elective cases and emergency cases

Procedure	Total case	Burst abdomen cases
Emergency	760	80
Elective	40	0

Figure 3 : Burst abdomen in elective cases and emergency cases



Burst Abdomen In Emergency Cases Table 4 : Post-operative wound discharge

Post-operative wound discharge	No. of cases (n=80)	Percentage
Sero-sanguinous	60	75
Purulent	15	18.75
Feculent	5	6.25

Postoperative wound discharge was measured and serosanguinous was found in 60.0% of patients, purulent in 15.0% of patients, and feculent was found in 5.0% of patients.

Figure 4 : Post-operative wound discharge

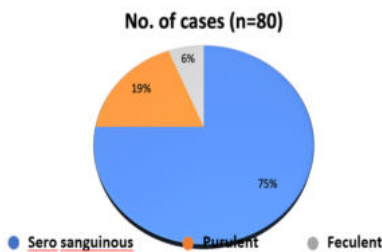
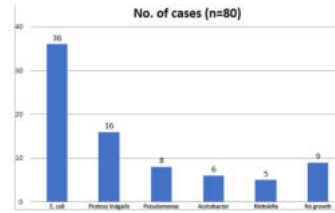


Table 5 : Organisms cultured from wound discharge

Organism	No. of cases (n=80)	Percentage
E. coli	36	45
Proteus Vulgaris	16	20.0
Pseudomonas	8	10.0
Acetobacter	6	7.5
Klebsiella	5	6.25
No growth	9	11.25

E. coli was the most common organism in 36.0% of patients, followed by proteus Vulgaris in 16.0%, Pseudomonas in 8.0%, Acetobacter in 6.0%, and Klebsiella in 5.0% of cases. There were 9.0% of patients who did not show any growth.

Figure 5 : Organisms cultured from wound discharge



Discussion

In spite of advancements in surgical techniques, facilities for modern equipments and personal experiences, burst abdomen still play an important role in postoperative morbidity and mortality. Incidence of burst abdomen varies with underlying general condition, the type of operation and the presenting pathology. The peak incidences are between 4th and 6th Postoperative days. Various factors are also involved in wound healing and in the process of burst abdomen; these predisposing factors that causes wound disruption have been studied extensively. They are classified as preoperative general causes, operative or local cause, and postoperative causes.

Burst abdomen can occur in any age group. In our study, the mean age of the studied patients was 47.25±8.95 years, and the majority of 32.5% of patients were belonging between 51-60 years of age followed by 26.25% of patients more than 60 years of age, and only 7.5% of patients were belonging to less than or equal to 30 years of age. (table 1, fig. 1) Our finding was in accordance with Rashid MHA et al study, where maximum 30% of patients were more than 50 years of age. Another study by, Jaiswal NK et al also reported similar results that mean age of patients was 49 years and 78% cases were male in his study. These findings correlate with the observation of Hermosa JR et al, they found in their series 24.0% cases with more than 50 years of age. Pollock AV et al found in their series 20.0% cases with older age group. Burst abdomen is more in old age group because of atherosclerotic change of blood vessels wall results in less tissue perfusion and also they are more prone to infection due to decreased immunity. Next higher incidence was in the more than 60 years age group (26.0%). This is may be due to higher rate of admission of this age group in the surgical unit of this hospital.

Burst abdomen was more common in males (76.25%) in our study. (table 2, fig. 2) Spiliotis J et al¹, Waqar SH et al² and Jaiswal NK et al³ also reported male dominance in their respective studies.

High incidence of burst abdomen was seen in emergency operation as compared to elective surgeries. Lack of bowel preparation, pre-operative optimisation and higher frequency of contaminated cases are the major causes responsible for burst abdomen in emergency surgeries. In present study 80 cases developed burst who underwent emergency operation while no cases in elective operation. (table 3, fig. 3) Similarly, Jaiswal NK et al³ also reported 91.5% cases underwent emergency operation while 8.5% cases underwent elective cases. Another study, by Afzal S et al reported the incidence in elective surgeries was 1.73%

Comparison on basic of discharge

In the present study, 79 (79.0%) patients out of 100 had serosanguinous discharge from the wound. Fourteen (14.0%) patients out of the total had purulent discharge. Seven (7.0%) patients experienced feculent discharge from wound site (table 4, fig. 4) Similar results were also reported by Jaiswal NK et al³, where 66 (80.5%) patients out of 82 had serosanguinous discharge from thewound. 11 (13.4%) patients out of 82 had purulent discharge. 5 (6.1%) patients experienced feculent discharge from wound site.

Comparison of organism cultured

E. coli was the most common organism in 36.0% of patients, followed by proteus Vulgaris in 16.0%, Pseudomonas in 8.0%, Acetobacter in 6.0%, and Klebsiella in 5.0% of cases. There were 9.0% of patients who did not show any growth. (table – 5, Fig. 5)N. K. Jaiswal et al in there study the observation of organism isolated was also gram negative bacteria.

CONCLUSION

Burst abdomen is a serious sequel of impaired wound healing and our findings were as follows:- Mean age group of presentation was 47.25± 8.95 years., male preponderance of 76.25% with respect to female of 23.575%, burst abdomen present in 80 cases of emergency laparotomy

and none in elective cases, on the basis of discharge 75% cases were having sero sanguinous discharge, the organism most commonly isolated from stitch line was gram negative bacteria i.e. E coli (45%).

Limitations of the study

The limitation of this study lies in small patient number, which makes it difficult to generalise the results on population as a whole

Strengths of the study

The results of the study managed to give the basic foundation to establish the need of risk based approach in managing the patients with impending burst abdomen having above mentioned risk factors.

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Conflicts of interest: None

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