

Burst Abdomen: A Post-operative Morbidity

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Abstract

Introduction: Burst abdomen is a severe post-operative complication experienced by Surgeons and Gynecologist, who do a significant amount of surgery. Burst abdomen usually occurs due to various predisposing factors which can be prevented to some extent by having knowledge regarding them.

Purpose: The purpose of this study was to assess the patients, who had undergone laparotomy and developed burst abdomen.

Methods: The study was among 162 patients underwent laparotomy to know the occurrence of burst abdomen. The age of the study subjects was from 31 to 64 years. Pre-operative predisposing factors related to burst abdomen were also recorded. The clinical diagnosis of the patients was done such as physical examination, hematological investigations.

Results: Out of 162 patients treated, 16 developed burst abdomen with a percentage of 9.87%. Patients treated with emergency laparotomies was higher in number (15/102, i.e., 14.7%) while only one patient with elective laparotomy (1/60, i.e., 1.7%). The frequency of burst abdomen was significantly higher in older age group as compared to younger. The most common risk factors as malnutrition (20.3%), followed by obesity (12.5%), anemia (12.4%), wound infection (11.9%), coughing (9.6%), and distension (8.5%).

Conclusion: Burst abdomen is a serious complication of impaired wound healing. More studies are needed to spread knowledge about it to reduce its incidence.

Key words: Burst abdomen, Death, Laparotomy, Morbidity, Post-operative

INTRODUCTION

Burst abdomen is a severe post-operative complication experienced by Surgeons and Gynecologist, who do a significant amount of surgery. The frequency as described in the international data ranged from 0.4% to 3.5%.¹⁻³ and is also associated with a mortality rate in patients as high as 45%.⁴ While our country data stated still higher frequency of burst abdomen with overall rate of 4.8% and 6.6%.^{5,6}

Burst abdomen is associated with several factors which increases its incidence.⁷ Efforts have been made to conquer this difficulty with various innovations using

of different types of suture materials.⁸ A surgeon can perform a technically perfect operation in a patient, who is severely compromised by the disease process and still have a complication.

Various pre-operative factors which are predisposing to this unpleasant and tragic post-operative complication are studied.⁹ Because of high mortality rate due to burst abdomen in surgical operations. The management of these ranges from simple dressing to further closure of burst abdomen followed by a period of intensive care.¹⁰

The purpose of the present study was to assess the efficacy of closure of laparotomy incisions and its different predisposing factors.

METHODS

The present study was conducted among 162 patients underwent laparotomy by midline incisions in the Department of General Surgery and Obstetrics and

Access this article online



www.ijss-sn.com

Month of Submission : 08-2015

Month of Peer Review : 09-2015

Month of Acceptance : 09-2015

Month of Publishing : 09-2015

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Gynecology, Chhattisgarh Institute of Medical Sciences, Bilaspur, Chhattisgarh, India. The age of the study subjects was from 31 to 64 years.

Inclusion and Exclusion Criteria

Patients undergoing emergency laparotomies were included in the study and patients with previous laparotomies were excluded.

The demographic profile of the patients was noted as age and gender. Further details regarding date of operation and discharge were observed also a detail history of the disease was taken. Other problems of the patients were also recorded as anemia, vomiting, coughing, distension, diabetes, hypoproteinemia, obesity, and malignancy, immunocompromised patients and wound infection. The clinical diagnosis of the patients was done like physical examination, hematological investigations, blood sugar, radiological investigations, and ultrasonography.

A prophylactic dose of antibiotics was given to all the study participants. All the cases were closed with non-absorbable monofilament, synthetic suture. Follow-up examination of wound was post-operatively onward.

RESULTS

A total of 162 patients treated with laparotomy through a midline incision during study. The mean age of patients was 47.32 ± 12.644 years. The number of male patients was 94 and female patients were 68 (out of which 48 females had pregnancy). A total of 102 patients with various pathologies were treated with emergency laparotomies while 60 were treated with elective laparotomies.

The study showed that out of 162 patients treated in this study, 16 developed burst abdomen with a percentage of 9.87%. Emergency laparotomies cases showed a higher number (15/102, i.e., 14.7%) while only one patient developed burst abdomen treated with elective laparotomy (1/60, i.e., 1.7%).

The frequency of burst abdomen was significantly higher in older age group as compared to younger. Regarding the severity of burst abdomen 47% of the patients had partial burst and 53% had complete burst. The occurrence of burst abdomen was almost higher in the older patients as compared to young ones as shown in Table 1.

All the patients with burst abdomen have most common risk factors as malnutrition (20.3%), followed by obesity (12.5%), anemia (12.4%), wound infection (11.9%), coughing (9.6%), distension (8.5%), immune compromised patients (7.4%), hypoproteinemia (7.1%), vomiting (5.7%),

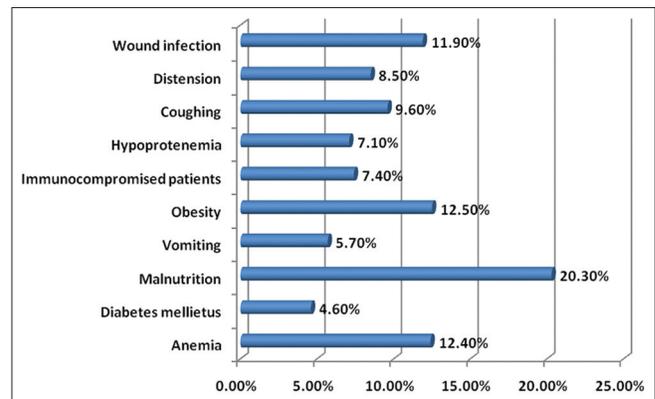
and diabetes mellitus (4.6%) as mentioned in Graph 1. The study also showed different pathologies as mentioned in Graph 2 showing tuberculosis abdomen (23.6%) as common cause, followed by obstruction due to post-operative band (18.5%) and obstetrical complications such as rupture uterus and obstructed labor (14.3%).

DISCUSSION

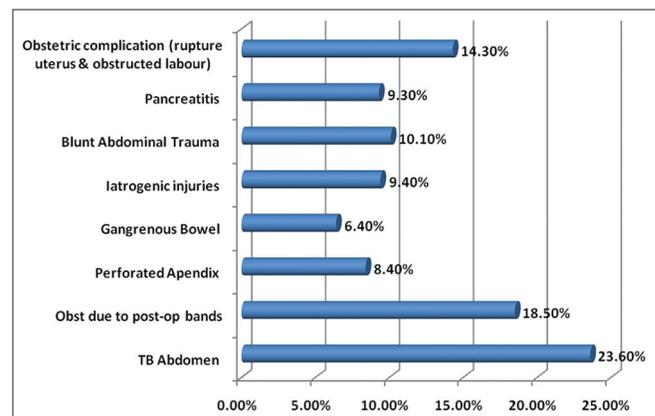
Burst abdomen is considered to be there when intestine or other viscera are seen through the abdominal wound after surgery (general and obstetric surgeries). It commonly occurs among patients on 6th-8th day after operation. There might be different factors relating to the occurrence of burst abdomen like suture material and technique, postoperative coughing and vomiting, distension,

Table 1: Age and percentage of study participants with burst abdomen

Age	Number of patients	Burst abdomen (%)
30-40	26	9.70
41-50	38	17.50
51-60	66	36.90
61-70	32	35.90



Graph 1: Frequency of predisposing factors in patients



Graph 2: Frequency of pathologies among patients

wound infection, obesity, hypoproteinemia, anemia, and immunocompromised conditions.¹¹

The frequency of burst abdomen in the present survey was 9.87% with a higher range than other studies which showed a frequency ranging from 5.3% to 8.3%.^{5,12} The incidence of burst abdomen is comparatively less in many Western studies which showed its occurrence as 0.4-3.5%. This may be attributable to poor nutritional status of patients, severe anemia hypoproteinemia, delay in presentation to tertiary health care hospitals, diseases, such as pregnancy with obstructed labor and rupture uterus, pancreatitis, tuberculous abdomen, and perforation peritonitis, among patients in the current study.

However, study done by Amini *et al.* in Pakistan showed high prevalence than the present data. It also showed that frequency of burst abdomen was higher following emergency laparotomies (14.89%) than elective laparotomy (2.7%).¹³

Similarly, our study showed higher frequency of burst abdomen in the cases done with emergency laparotomies than elective laparotomy. It is due to the fact that patients who undergo emergency surgery are generally in suboptimal condition and the chances of contagion of the surgical field are higher than in elective surgery. Furthermore, the concert of the surgeon might be affected that could lead to suboptimal closure of the abdomen at the ending of procedure.²

Some studies showed that elective and emergent laparotomy have also achieved a statistically similar risk.^{14,15} Indian authors have also reported burst abdomen occurrence from 10% to 30% of emergency cases.^{16,17}

Many patients undergoing emergency laparotomy suffer from one of these co-morbid conditions, detrimental to healing. It was observed profound necrosis of the aponeurotic layers of abdomen in these cases. Such necrotic linea alba does not hold sutures well which cut out with about of coughing or sneezing.

There are major risk factors for burst abdomen as malnutrition (20.3%), followed by obesity (12.5%), anemia (12.4%), wound infection (11.9%), coughing (9.6%), distension (8.5%), immunocompromised patients (7.4%), hypoproteinemia (7.1%), vomiting (5.7%), and diabetes mellitus (4.6%) in this study. Sinha *et al.* carried out a study in Oula University Hospital,¹⁸ among 48 patients who developed burst abdomen and found that 65% patients with pre-operative hypoalbuminemia, other risk factors included anemia, malnutrition, chronic lung disease and emergency procedure. In another study, 43.8% of patients showed hemoglobin <10 g% as the chief risk factor. Other

factors were poor nutritional status, obesity, diabetes mellitus, and hypoproteinemia.¹⁹

The maximum incidence of burst abdomen was seen within 7 days and these findings were in correlation to Parmar *et al.* study.⁹ In the present study, no mortality was seen in the case of burst abdomen, whereas mortality rate related to this surgery mentioned in the literature is 15-24%.²⁰ Fischer stated it to be 36%,²¹ while in a local study by Hanif *et al.* it was 50%.²²

CONCLUSION

Burst abdomen is a severe follow-up of impaired wound healing. Many factors can pre-dispose to this serious problem as anemia, hypoproteinemia, obesity, coughing, vomiting, distension, malnutrition and diabetes mellitus. Post-operatively it can be prevented by improving the nutritional status of the patient along with strict aseptic precautions and proper surgical technique.

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How to cite this article: Soni P, Haripriya VB, Haripriya A, Dutt V. Burst Abdomen: A Post-operative Morbidity in Medical College, Bilaspur, India. *Int J Sci Stud* 2015;3(6):175-178.

Source of Support: Nil, **Conflict of Interest:** None declared.