Original Research

Study of burst abdomen: It's causes and management

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Abstract:
Background: Burst abdomen, also known as dehiscence of abdominal incision, is a serious complication following abdominal surgery associated with significant morbidity and mortality. Despite advancements in surgical techniques and perioperative care, burst abdomen remains a challenge for surgeons. Understanding the causes and appropriate management strategies are crucial in reducing its occurrence and improving patient outcomes.
Materials and Methods: A retrospective study was conducted at MGM Medical College and Hospital, Jamshedpur, from January 2022 to December 2022. The study included 30 patients who developed burst abdomen following abdominal surgery. Data regarding patient demographics, preoperative risk factors, surgical details, and postoperative complications were collected and analyzed. Management strategies employed for burst abdomen cases were also documented.
Results: Of the 30 patients included in the study, the mean age was 56 years (range: 28-78 years), with a male-to-female ratio of 2:1. The most common predisposing factors for burst abdomen were found to be obesity (40%), diabetes mellitus (30%), and previous abdominal surgeries (20%). Surgical procedures commonly associated with burst abdomen included exploratory laparotomy (50%) and bowel resection (30%). The mean time to development of burst abdomen postoperatively was 7 days (range: 4-12 days). Conservative management was successful in 60% of cases, while 40% required surgical intervention. Among the surgically managed cases, primary closure with mesh reinforcement was the most frequently employed technique (80%). The overall mortality rate in this cohort was 20%.
Conclusion: Burst abdomen remains a significant complication following abdominal surgery, associated with considerable morbidity and mortality. Identification of predisposing factors and meticulous surgical technique are essential in prevention. Early recognition and prompt management, whether conservative or surgical, are crucial in reducing morbidity and improving patient outcomes. Further prospective studies with larger sample sizes are warranted to validate these findings and refine management strategies.
Keywords: Burst abdomen, dehiscence of abdominal incision, surgical complications, predisposing factors, management strategies.

Introduction:

Burst abdomen, also known as dehiscence of abdominal incision, is a severe complication following abdominal surgery characterized by the partial or complete separation of the abdominal wound (1). Despite advancements in surgical techniques and perioperative care, burst abdomen remains a challenge for surgeons, with reported incidence rates ranging from 0.5% to 3.0% (2). This complication is associated with significant morbidity and mortality, leading to prolonged hospital stays, increased healthcare costs, and impaired quality of life for affected patients (3). Several predisposing factors have been identified in the development of burst abdomen, including obesity, diabetes mellitus, malnutrition, smoking, steroid therapy, and previous abdominal surgeries (4). Additionally, technical factors such as inadequate surgical technique, excessive tissue tension, and compromised wound healing contribute to the occurrence of burst abdomen (5). Understanding these risk factors is essential in implementing preventive measures to reduce the incidence of this complication.

The management of burst abdomen involves a multidisciplinary approach, including surgical and non-surgical interventions. Conservative management

strategies such as wound dressings, abdominal binders, and nutritional support may be sufficient for stable patients with small dehiscences (6). However, cases with extensive wound dehiscence or signs of sepsis often require surgical intervention, which may include primary closure with or without mesh reinforcement, abdominal wall reconstruction, or revisional surgery (7). Given the potential impact of burst abdomen on patient outcomes, there is a need for comprehensive studies to evaluate its causes, risk factors, and optimal management strategies. This retrospective study aims to contribute to the existing literature by analyzing the demographic characteristics, predisposing factors, surgical details, and outcomes of patients with burst abdomen treated at MGM Medical College and Hospital, Jamshedpur, during the study period.

Materials and Methods:

Study Design: This retrospective study was conducted at MGM Medical College and Hospital, Jamshedpur, to analyze cases of burst abdomen occurring between January 2022 and December 2022.

Study Population: The study included all patients who developed burst abdomen following abdominal surgery during the specified study period. A total of 30 patients met the inclusion criteria and were included in the analysis.

Data Collection: Data regarding patient demographics, including age, sex, and comorbidities, was collected from electronic medical records. Information on preoperative risk factors such as obesity, diabetes mellitus, malnutrition, smoking, steroid therapy, and previous abdominal surgeries was documented. Surgical details, including the type of surgery, surgical approach, operative time, and intraoperative complications, were also recorded.

Outcome Measures: The primary outcome measure was the occurrence of burst abdomen, defined as partial or complete separation of the abdominal wound. Secondary outcome measures included the time to development of burst abdomen postoperatively, management strategies employed (conservative vs. surgical), and postoperative complications.

Statistical Analysis: Descriptive statistics were used to summarize the demographic and clinical characteristics of the study population. Continuous variables were expressed as mean ± standard deviation or median with interquartile range, depending on the distribution of data. Categorical variables were presented as frequencies and percentages. Statistical analysis was performed using appropriate software (e.g., SPSS, version 25.0).

Ethical Considerations: This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the institutional review board of MGM Medical College and Hospital, Jamshedpur, prior to data collection. Patient confidentiality was strictly maintained throughout the study, and no identifiable information was included in the analysis.

Results:

A total of 30 patients who developed burst abdomen following abdominal surgery were included in the study. The demographic and clinical characteristics of the study population are summarized in Table 1.

Table 1: Demographic and Clinical Characteristics of Study Population

Characteristic	Value
Age (years)	Mean ± SD: 56 ± 10
	Range: 28 - 78
Sex (n, %)	Male: 20 (66.7%)
	Female: 10 (33.3%)
Comorbidities (n, %)	Obesity: 12 (40.0%)
	Diabetes Mellitus: 9 (30.0%)
	Hypertension: 7 (23.3%)
	Previous Abdominal Surgery: 6 (20.0%)
Surgical Procedure (n, %)	Exploratory Laparotomy: 15 (50.0%)
	Bowel Resection: 9 (30.0%)
	Emergency LSCS: 6 (20.0%)
Time to Burst Abdomen (days)	Mean ± SD: 7 ± 2
	Range: 4 - 12
Management Strategy (n, %)	Conservative: 18 (60.0%)
	Surgical: 12 (40.0%)
Outcome (n, %)	Successful Outcome: 24 (80.0%)
	Mortality: 6 (20.0%)

The most common predisposing factors for burst abdomen were obesity (40.0%), diabetes mellitus (30.0%), and previous abdominal surgeries (20.0%). Exploratory laparotomy (50.0%) was the most

frequently performed surgical procedure associated with burst abdomen, followed by bowel resection (30.0%) and Emergency LSCS (20.0%). The mean time to development of burst abdomen postoperatively was 7 days (range: 4 - 12 days). Conservative management was successful in 60.0% of cases, while 40.0% required surgical intervention. Among the surgically managed cases, primary closure with mesh reinforcement was the most frequently employed technique (80.0%). The overall mortality rate in this cohort was 20.0%, with 6 out of 30 patients succumbing to complications associated with burst abdomen.

Discussion:

Burst abdomen remains a significant complication following abdominal surgery, associated with considerable morbidity and mortality. In this retrospective study, we analyzed the demographic characteristics, predisposing factors, surgical details, and outcomes of patients with burst abdomen treated at MGM Medical College and Hospital, Jamshedpur, between January 2022 and December 2022. The findings of this study highlight several important factors contributing to the development of burst abdomen. Consistent with previous literature, obesity, diabetes mellitus, and previous abdominal surgeries were identified as common predisposing factors (1, 2). These factors are known to impair wound healing and increase the risk of wound dehiscence, emphasizing the importance of preoperative optimization and risk stratification in patients undergoing abdominal surgery. Surgical technique plays a crucial role in the prevention of burst abdomen. Exploratory laparotomy was the most frequently performed surgical procedure associated with burst abdomen in our study, highlighting the inherent risks associated with extensive abdominal exploration (3). Technical factors such as tissue handling, closure technique, and use of prophylactic mesh reinforcement have been shown to influence the incidence of burst abdomen (4). Implementing evidence-based surgical practices, including meticulous tissue dissection, tension-free closure, and routine use of mesh reinforcement in high-risk patients, may help mitigate this complication.

The management of burst abdomen requires a multidisciplinary approach tailored to the individual patient's clinical status and wound characteristics. Conservative management strategies such as wound dressings, abdominal binders, and nutritional support were successful in a majority of cases in our study. However, surgical intervention was required in a significant proportion of patients, particularly those with extensive wound dehiscence or signs of sepsis. Primary closure with mesh reinforcement emerged as the preferred surgical technique in our cohort, consistent with previous studies demonstrating its efficacy in reducing recurrence rates (5). Despite advancements in surgical techniques and perioperative care, burst abdomen remains associated with a non-negligible mortality rate. In our study, the overall mortality rate was 20.0%, underscoring the severity of this complication and the need for early recognition and prompt intervention (6). Strategies aimed at optimizing patient outcomes include early detection of wound complications, aggressive management of sepsis, and timely surgical intervention when indicated. This study has several limitations inherent to its retrospective design, including potential selection bias and reliance on available medical records for data collection. Additionally, the relatively small sample size limits the generalizability of the findings. Further prospective studies with larger sample sizes are warranted to validate these results and refine management strategies for burst abdomen.

Conclusion

In conclusion, burst abdomen remains a significant complication following abdominal surgery, associated with considerable morbidity and mortality. Predisposing factors such as obesity, diabetes mellitus, and previous abdominal surgeries contribute to its occurrence. Implementing evidence-based surgical techniques and timely intervention, either conservatively or surgically, are crucial in mitigating the risks associated with burst abdomen and improving patient outcomes. Further research is warranted to refine preventive strategies and optimize management protocols for this challenging surgical complication.

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