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A Study of Burst Abdomen and Wound Dehiscence: Its Causes and Management

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ABSTRACT:

Background: Separation of abdominal wounds (ie, dehiscence) with or without protrusion of intra-abdominal contents (ie, evisceration) is a cause of considerable morbidity and mortality**. Historically, wound dehiscence rates of up to 10% were reported; contemporary series estimate an incidence between 1% and 3%. Mortality associated with dehiscence has been estimated at 16%.The mean time to wound dehiscence is 8 to 10 days after operation[1].**Burst abdomen is a severe post-operative complication. Burst abdomen is defined as post-operative separation of abdominal musculo-aponeurotic layers The study aims to find etiological factors of burst abdomen in hospitalised patients, evaluate current management methods and to compare conservative and operative approach with respect to complication and outcomes.This scenario typically occurs 5 to 8 days following surgery when healing is still in the early stages. The causes of dehiscence are similar to the causes of poor wound healing and include infection, increased abdominal pressure, diabetes, malnutrition, smoking, and obesity.

Methods: All cases presenting with abdominal wound dehiscence after surgery were included. An elaborate clinical history was taken in view of the significant risk factors, the types of surgery performed, type of disease involved and management methods and their outcome. A total of 30 cases were included in this prospective study.

Results: The results concluded that male patients have a higher incidence of laparotomy wound dehiscence . Patients presenting with peritonitis secondary to gastro-duodenal perforation are more prone to burst abdomen.

Conclusions: Burst abdomen is a serious sequel of impaired wound dehiscence .Presence of anaemia, hypoproteinaemiafavours high incidence of burst abdomen. Delayed suturing, of burst abdomen has a lower frequency of complications. Adherence to proper technique and sincere efforts to minimize the impact of the predisposing factors play a much larger role in both treatment and prevention of this condition.

Keywords: Abdominal wound dehiscence, Burst abdomen, wound healing , wound management

I. INTRODUCTION

Burst abdomen and abdominal wound dehiscence are the severe post-operative complication. Incidence asdescribed in literature ranges from 0.4% to 3.5%[2]. Burst abdomen is defined as post-operative separation and evisceration of abdominal musculo-aponeurotic layers, which is recognised within days after surgery and requires some form of intervention. As noted earlier, the literature on abdominal closure appears to favor a running mass closure with slowly resorbable or nonresorbable sutures. Notwithstanding such technical considerations, a variety of patient-associated risk factors for dehiscence are recognized and include advanced age (>65 years), hypoalbuminemia, wound infection, ascites, obesity, steroid use, chronic obstructive pulmonary disease, pneumonia, cerebrovascular accident with residual deficit, anemia (prolonged ileus, coughing, emergency operation, and operative time greater than 2.5 hours.[4,5,6] Although some surgeons advocate prophylactic placement of retention sutures in those at high risk for dehiscence,. Patient identified as

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being high risk may benefit from close observation and early intervention.[3] Superficial dehiscence is when the wound edges begin to separate and by increased bleeding or drainage at the site. The clinician should investigate the wound for worrisome signs, including infection or necrosis.[7]Prompt identification is important for preventing worsening dehiscence, infection, and other complications.

The study aims to find etiological factors of burst abdomen in hospitalised patients, evaluate current management methods and to compare conservative and operative approach with respect to complication and outcomes.

II. METHODS

This is a retrospective study carried out from August 2022 to December 2022 in the Department of General Surgery, Parul Sevashram Hospital , PIMSR, Parul University, Vadodara, Gujarat, India.

Total 30 patients who underwent both emergency or elective abdominal procedure (including emergency appendicectomy) and developed post- operative dehiscence during the study period were included. The inclusion criteria used were patients above 18 years age of either sex. Exclusion criteria being primarily operated outside or patient who had undergone previous laparotomy for any condition (wound dehiscence or burst abdomen).

A comprehensive history and thorough physical examination with any other relevant history were take from case papers. Statistical analysis was processed using Excel software programs. Observations are represented as bar diagrams and pie charts.

III. RESULTS

Age

The youngest patient was 15 years old and the oldest patient was 75 years old. The highest incidence of burst abdomen and wound dehiscence in the present study was 15 between and 70 years of age, the average age being approximately 49 years. The patients in this study were in the range of 49±13.5 (standard deviation) years.

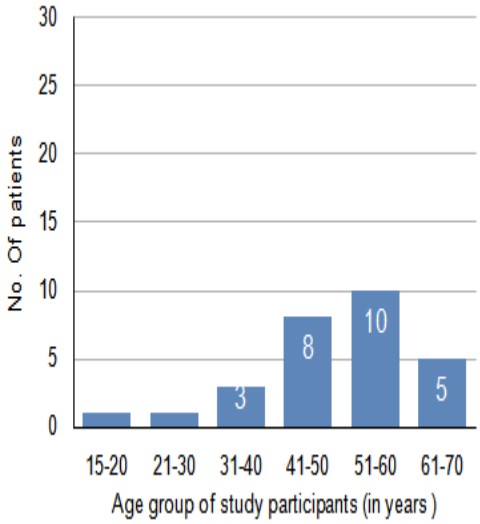

Figure.1 Age and number of study participants with burst abdomen

Sex distribution

In present study, 23 patients (77%) of the patients were male and the remaining 7 (23 %) were females. The male: female ratio was approximately 4:1.

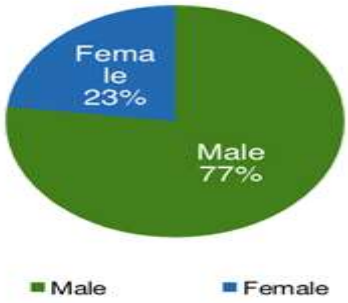

FIGURE.2 SEX DISTRIBUTION IN CASES OF BURST ABDOMEN AND WOUND DEHISCENCE

Preoperative predisposing causes

The study showed that the majority of patients had intra- abdominal sepsis (24 patients) and anaemia (22patients) as preoperative predisposing factors. Many patients had more than one predisposing factor.

Planned or emergency surgery

The incidence of burst abdomen and wound dehiscence was higher in patients operated

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as emergency surgery (16/30) as compared to elective surgery (14/30).

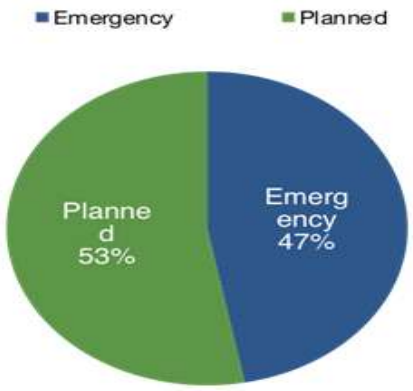

FIGURE.3 INCIDENCE OF BURST ABDOMEN IN PLANNED AND EMERGENCY CASES

Intra-abdominal pathology and its origin

Indication of laparotomy being perforation peritonitis are most commonly being intestinal obstruction (23.33%) and Hollow viscus perforation (20.00%) other indication.

Type of closure

Mass closure was the standard technique used in all the cases in the series, the technique involves incorporating all of the layers of the abdominal wall (except skin) as one structure. Continuous sutures with No.1 Polypropylene were used in 20 patients, in other 10 patients, abdomen was closed with simple interrupted Polypropylene sutures.

Predisposing factors	No. Of cases
Intra abdominal sepsis	24
Hypoalbuminemia	19
Anemia	12
Blood urea > 40 U/l	10
WBC > 11000 cu/mm	8
Hypertension	7
Uraemia	4
Enteric fever	4

Predisposing factors	No. Of cases
Chronic alcoholic	3
Chest disease	3
Diabetes	3
Ascites	2
Jaundice	2
Hypothyroidism	1
CVA	1

TABLE.2 PREDISPOSING FACTORS OBSERVED IN PRESENT STUDY, OUT OF 30 CASES

Time of disruption

The majority of wound dehiscence occurred between $5^{th}$and 8^{th}post-operative day, with the highest incidence on the 6^{th}post-operative day.
The majority of burst abdomen occurred between $7^{th}$and 10^{th}post-operative day, with the highest incidence on the 8^{th}post-operative day.

Post-operative wound discharge

In present study, 15 patients out of 30 had serosanguinous discharge from the wound. 12 patients out of 30 had purulent discharge. 3 patients experienced feculent discharge from wound site.

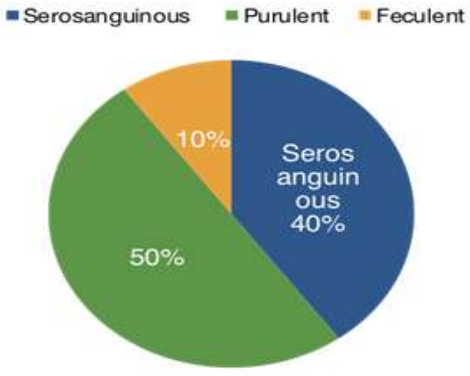

FIGURE.4 POST-OPERATIVE WOUND DISCHARGE

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Partial or complete burst

In present study, 3 patients out of 30 (10%) had complete burst involving the whole length of the wound while 27 patients out of 30 (90%) had wound dehiscence.

Management

Conservative treatment [daily saline dressing (exclusively by dressing in 16 patients) followed by secondary suturing of wound in 12 patients] was done in 28/30 cases. Immediate resuturing of burst abdomen was done in 2 patients with retention sutures.

Complications of management and their treatment

Out of 30 patients 26 (86.66%) patients fully recovered, 3(10) patient developed burst abdomen over a period of 9 days, 1 patients developed subsequent re-burst who subsequently died due to septicaemia. Out of 30 patients in the present study death occurred in 1 patients (3.33%).

Total hospital stay

Total hospital stay of the patients increases because of burst abdomen. In present study, out of 30 patients, 5 had a total hospital stay between 31 and 40 days. The mean duration of total hospital stay was 35±6.9 days.

Mortality

Out of 30 patients, death occurred in 1 patient , giving a mortality rate of 3.33 %.

Group	Treatment given	Percentage	No. of cases
I	Conservative management	53.33%	16
II	Delayed secondary suturing	40%	12
III	Immediate resuturing with tension suture	6.66%	2

TABLE.1 MODE OF GIVEN TO THE PATIENTS OF BURST ABDOMEN

Diagnosis	Percentage	Cases
Intestinal obstruction	23.33%	7
Peptic perforation	20%	6
Ileal Perforation	16.66%	5
Malignancy	13.33%	4
Caecal perforation	10%	3
Perforated Appendix	6.66%	2
Hydatid cyst of liver	3.33%	1
Choledocolithiasis	3.33%	1
Blunt trauma abdomen	3.33%	1

TABLE.3 FREQUENCY OF PATHOLOGIES AMONG PATIENTS

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IV. DISCUSSION :

This study reviewed 30 patients who underwent emergency and elective laparotomy with wound dehiscence and burst abdomen.

In present study we have analysed,

The most common age group which was affected was 51-60 years (lowest – 15 years, highest -70 years).[8] studyAm J Surg 1992; 163:324–330.

In male preponderance was found (male:female = 4:1)

The Predisposing factors for wound dehiscence and burst abdomen were Intra abdominal sepsis, hypoalbuminaemia, anemia & underlying conditions like DM, Enteric fever, CKD , COPD and Ascites.

The incidence was maximum in Patient who underwent emergency surgery.[9] Study .Am J Surg 1995; 170:387–390.

It was also analysed that there is no difference between the closure suturing technique continuous versus interrupted suturing using non-absorbable sutures.

The majority of wound dehiscence occurred between 5th and 8th post-operative day.

The Burst abdomen occurred between 7th and 10th post-operative day.

In the study the post-operative wound discharge was found to be seropurulent (50%), Seroseguious (40%) and fecal (10%) and percent followed wound dehiscence and burst abdomen.

In the study 90% patients had wound dehiscence and 10 % patients had burst abdomen from which 53.33% was managed conservatively , 40% was managed with delayed suturing and 6.66% was managed with retention sutures.

V. CONCLUSION :

Important risk factors for abdominal wound dehiscence and burst abdomen have been identified in this study, including age, gender, chronic pulmonary disease, jaundice, anemia, emergency surgery, type of surgery, coughing, and wound infection.Laparotomy wound dehiscence and burst abdomen is more common in males when compared to females with ratio of 4:1. Patients in the age group of 51-60 years found to have highest incidence of abdominal wound dehiscence and burst abdomen with the mean age reported to be 49 years. Incidence of abdominal wound dehiscence and burst abdomen is more common in patients with peritonitis due to intestinal obstruction perforation than in case of peptic perforation . Patients with surgical wound classified as contaminated shows more tendency towards developing wound dehiscence and burst abdomen . Emergency surgeries have a higher incidence of abdominal wound dehiscence and burst abdomen than elective . Patients with hemoglobin levels below 10 gm% are at a greater risk for abdominal wound dehiscence and burst abdomen. The majority of wound dehiscence occurred between 5th and 8th post-operative day.

The Burst abdomen occurred between 7th and 10th post-operative day.Prolonged surgery duration of more than 2.5 hours, along with layered closure of abdomen showed more dehiscence and burst abdomen compared to mass closure.

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