



THE EFFICACY OF NEW SCORING SYSTEM TO PREDICT BURST ABDOMEN.

General Surgery

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ABSTRACT

INTRODUCTION: The frequency of burst abdomen in the international data ranged from 0.4% to 3.5%. 1-3 and in India it is about 4.8-6.6% 4-5. Wound dehiscence is the partial or complete disruption of an abdominal wound closure with or without the protrusion or evisceration of abdominal contents. Dehiscence of the wound occurs before the cutaneous healing. It is associated with the mortality of-19-45%. Because of its high mortality, it is essential to use preventive steps in the peri-operative period.

The major risk factors for burst abdomen are-Malnutrition, obesity, anemia, infection, cough, distention of abdomen, malignancy, diabetes mellitus and immunocompromised state. Frequency of burst abdomen is higher following emergency laparotomies (14.89%) than elective laparotomy (2.7%). Prophylactic reinforced tension suturing prevents burst abdomen.

MATERIALS AND METHODS: The study conducted includes 144 patients who underwent laparotomy under emergency and elective basis. Pre-operative and post-operative examination was done and scoring was done for 13 indices. Patients were followed up for 11 days post-operatively and daily examination of the operated site was done.

RESULT- In the study of 144 patients 122 were operated on emergency basis and 22 on elective basis. Out of total cases 84 patients had score of more than 10(high risk) and 60 patients with low risk. Out of the high risk cases 18 had burst abdomen.

KEYWORDS

Burst abdomen, causes, high risk, emergency laparotomy.

INTRODUCTION-

Burst abdomen is partial/complete post-operative separation of a wound closure with protrusion/evisceration of the abdominal contents between days 7-14 post operatively. Burst abdomen is one of the most serious post-operative complications and is associated with high morbidity and mortality. It presents as a mechanical failure of wound healing of surgical incisions. Burst abdomen is a devastating incident that can cause pain, mental burden for the patient as well as complications including evisceration and re-operation. Burst abdomen occurs between post-operative day 4-11, most commonly on day-7.

MAJOR RISK FACTOR FOR BURST ABDOMEN-

Malnutrition, Obesity, Aneamia, infection, Cough, Distention of abdomen, Malignancy, Diabetes mellitus and Immunocompromised state.

The two scoring systems for predicting burst abdomen- VAMC Scoring system and ROTTERDAM's scoring system.

AIMS AND OBJECTIVES OF THE STUDY-

To find out the efficacy of new scoring system to predict burst abdomen.

MATERIALS AND METHODS-

Sample size-144
Study design-Prospective study
Duration of the study-1 year(October 2017 to October 2018)
Study place-Dept. of General Surgery –KIMS Hospital and Research Centre Bengaluru

INCLUSION CRITERIA-

All patients admitted in the Dept. of General Surgery-KIMS Hospital, undergoing Emergency and Elective Laparotomy with midline incision.

EXCLUSION CRITERIA-

Patients below 18 years of age.

METHODS OF COLLECTING DATA-

- Detailed history taking.
- General physical examination.
- Systemic examination.

- Investigations.
- Assessing the risk by score variables.
- Post-operative score.
- Follow up for 6 months.

NEW SCORING SYSTEM- PATIENT FACTORS-

SL.NO	INDICES	SCORE
1	Age	
	<40 yrs	0
	40-60 yrs	1
	>60 yrs	2
2	Co-morbidities	
	COPD	1
	Diabetes mellitus	1
	Chronic steroid intake	1
	Hypoalbuminemia	1
3	BMI	
	<29.5	0
	>29.5	1

BIO-CHEMICAL FACTORS-

SL.NO	INDICES	SCORE
1	Hemoglobin(mg/dL)	
	>11	0
	9-11	1
	<9	2
2	Serum albumin-(mg/dL)	
	>3.5	0
	<3.5	1
3	Serum creatinine (mg/dL)	
	<1.3	0
	>1.3	1
4	Total bilirubin-mg/dL)	
	<1.2	0
	>1.2	1

OPERATIVE PARAMETERS-

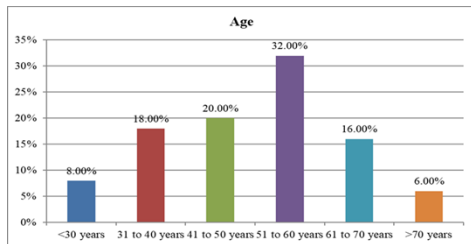
Sl.no	INDICES	SCORE
1	Peritonitis	

	Without	0
	With	1
2	Malignancy	2
3	Type of procedure	
	Elective	0
	Emergency	1
4	Type of incision	
	Upper abdomen	1
	Lower abdomen/both	2
5	Duration of surgery(hour)	
	<1	0
	1-2	1
	>2	2

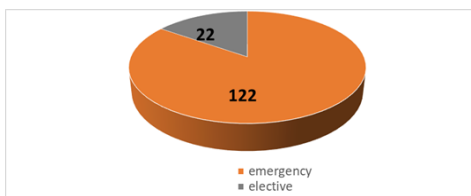
- MINIMUM SCORE-0
- MAXIMUM SCORE-24
- SCORE>10-HIGH RISK

RESULTS-

The study conducted includes 144 patients who underwent laparotomy under emergency and elective basis with midline incision. Pre-operative and post-operative examination was done and scoring was done for 13 indices. Patients were followed up for 11 days post-operatively and daily examination of the operated site was done.

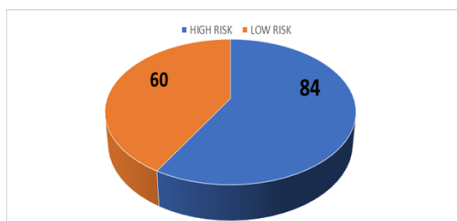


Bar diagram showing the age distribution among the study subjects

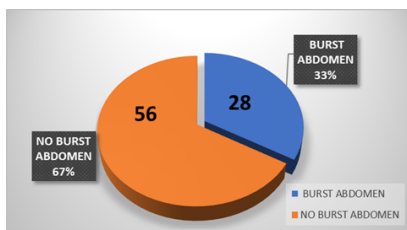


Pie diagram showing the case distribution among total cases.

RISK STRATIFICATION-AMONG TOTAL CASES



Pie diagram showing the distribution of cases.



BURST ABDOMEN-AMONG THE HIGH RISK CASES

DISCUSSION-

In my study,96 patients were males and 36 were females.Among the high risk patients,72 were males and 12 were females.Among the total number of BurstAbdomen cases,24 were males and 4 were females.

Most of the patients who had burst abdomen were between the age

group of 50-60 years. None of the patients below 40 years had abdominal wound dehiscence. In the study 8% were in the age group <30 years, 18% were in the age group 31 to 40 years, 20% were in the age group 41 to 50 years, 32% were in the age group 51 to 60 years, 16% were in the age group 61 to 70 years and 6% were in the age group >70 years. Mean age of the subjects was 50.46 ± 13.99 years.

The incidence of burst abdomen in the study is 19.45%.Out of 144 total cases,28 cases went for Burst abdomen.The total hospital stay of these patients was approximately 5.5 days(mean days) more than the patients without burst abdomen.

Mortality rate in the study-0.14%,1 patient died because of sepsis.

The incidence of burst abdomen was seen most commonly in emergency laparotomy which was comparable with Amini et al study which was conducted in Pakistan.The most common association with burst abdomen was COPD ,peritonitis,hypoalbuminemia, anemia, emergency laparotomy which was comparable with Sinha et al study conducted at Oula university hospital.

All the cases of burst abdomen had score more than 10 with an average score of 12.5.

Total Score at cut off of 10 had Sensitivity of 100%, Specificity of 64.29%, PPV of 34.8%, NPV of 100%.Total score at cut off of 11 had Sensitivity of 100%, Specificity of 76.19%, PPV of 44.4%, NPV of 100%. Hence Total score at cut off of 11 had higher diagnostic ability compared to at score of 10 in predicting Burst abdomen in our study.

Burst abdomen occurred between post-operative days of 6 to 10.Accoring to Parmar et al study burst abdoemn is more commonly seen on post-operative day 7.

Table showing the comparison between the new scoring system and other scoring systems-

Sl. No	Scoring System	AUC	Sensitivity	Specificity	PPV	NPV	P-value
1	VAMC	0.84	82%	70%	48%	92%	<0.001
2	Rotterdam	0.76	73%	71%	45%	89%	<0.001
3	New Scoring System	0.90	98.8%	78%	48.4%	100%	<0.0001

CONCLUSION-

- In conclusion The new scoring system can be used to predict the development of abdominal wound dehiscence.
- It can be used to identify patients who are at risk for developing burst abdomen.
- Hence extra care can be taken among high risk patients.
- Decreases morbidity and mortality.

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