



General Surgery

A COMPARATIVE STUDY OF ASSOCIATION OF BURST ABDOMEN IN CASES OF CONTINUOUS –VERSUS- INTERRUPTED X TYPE TO ABDOMINAL CLOSURE

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ABSTRACT

INTRODUCTION: Wound dehiscence is related to the technique of closure of abdomen and the suture used. Numerous studies have been conducted evaluating a bewildering variety of closure techniques and suture materials.

In this study interrupted x type of sutures for mass closure of midline laparotomy wound will be applied in the patients posted for emergency laparotomy and incidence of burst abdomen will be studied

MATERIALS AND METHODS: A total of 100 patients presenting to the Surgery Department for laparotomy were enrolled in this study. The study was conducted in Department of Surgery, TMU MC between December 2014 and September 2016. The study was approved by Departmental Research Committee and Institutional Ethics Committee of our institute.

RESULTS: 100 patients were enrolled for study comparing continuous and interrupted closure of midline laparotomy wound in patients posted for laparotomy for emergency conditions. Out of these 52 were randomized to undergo continuous closure and 48 into interrupted x-type closure group.

Out of total of 100 patients incorporated in this of study 69 male and 31 female. In continuous arm out of 52 patients 36 were male and 16 were female. In interrupted arm out of 48 patients 33 were male and 15 were female.

Out of total 100 patients included in the study 15 patients developed burst abdomen (15%). Out of 52 patients randomized to continuous group 12 developed burst abdomen and out of 48 patients randomized to interrupted x group only 3 developed burst abdomen. Relative risk of burst abdomen taking continuous suture as control group was 0.268 and was statistically significant ($p=0.038$).

CONCLUSION: At the end of the study it was concluded that patients posted for laparotomy for emergency conditions having multiple risk factors detrimental to wound healing fared better with interrupted x-type fascial closure and developed less no. of burst abdomen. Thus this technique can significantly reduce burst abdomen in patients undergoing emergency midline laparotomy.

KEYWORDS :**INTRODUCTION**

Dehiscence of wound following surgery carries with it a considerable morbidity as well as mortality. Historically, wound dehiscence rates of up to 10% were reported; contemporary series estimates an incidence between 1 to 3%.

In Indian scenario dehiscence of wound is commonest complication associated with emergency laparotomy. Dehiscence of wound is most commonly influenced by closure technique of abdominal wound

In this study interrupted x-type sutures was used for mass closure of Midline laparotomy wound in the patients posted for emergency laparotomy and its effectiveness in prevention of burst abdomen in setup of our hospital.

AIMS & OBJECTIVES

The purpose of this study is to compare association of burst abdomen in case of continuous versus interrupted x – suture to abdominal closure.

MATERIAL & METHODS

The study was conducted in Department of Surgery, Teerthanker Mahaveer Medical College & Hospital between JULY 2016 - JULY 2017. The study was approved by Departmental Research Committee and Institutional Ethics Committee of our institute.

All patients were given explanation of the study and signed a written consent form.

Patients were divided in two groups (patients undergo continuous or interrupted X-type suturing) by using simple randomization.

A total of 100 patients fulfilling inclusion criteria were included in the study carried out at Teerthanker Mahaveer Medical College Moradabad. Out of 100 patients, 52 were randomized into continuous type suture group and 48 into interrupted type suture group.

INCLUSION CRITERIA

All patients go through elective or emergency abdominal laparotomy for whichever the reason.

EXCLUSION CRITERIA

Patients < 18 years of age.

Patients with past history of laparotomy or patients with abdominal hernia or burst abdomen.

OBSERVATION & RESULT

A burst was considered present, when abdominal viscera were seen through the wound

RISK OF BURST: The risk (cumulative incidence)of burst was calculated as number of patients in a group or total number of patients in that group. The point estimate and 95% confidence intervals were calculated using Medical software.

Chi square test was used for hypothesis testing. Two tailed p value was used with a set of 0.05.

The observations are represented in following tables and graphs:

TABLE – 1 AGE DISTRIBUTION OF CASES

Age group (years)	Continuous group	Interrupted group	Total	Burst abdomen
>18-20	3	1	4	-
21-30	4	4	8	1
31-40	8	6	14	-
41-50	17	15	32	6
51-60	10	15	25	5
61-70	8	6	14	3
71-80	2	1	3	-

TABLE – 2 RELATIVE RISK OF BURST ABDOMEN

Outcome	Method of suturing				Total	
	Continuous		Interrupted		No.	%
	No.	%	No.	%		
Burst	12	12	03	3	15	15
No-burst	40	40	45	45	85	85
Total	52	52	48	48	100	100

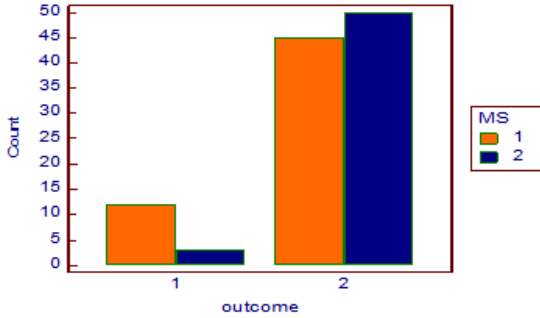
($p=0.0382$)

There were 12 cases burst abdomen out of 52 patients undergoing continuous method of closure. There were only 3 patients who developed burst abdomen out of 48 who underwent interrupted x-type closure. Result was statistically significant.

Risk of burst in continuous arm was 12/52 i.e. 23.07%. Risk of burst in interrupted arm was 3/48 i.e. 6.25%.

Relative risk of burst abdomen was 0.268 taking continuous suture group as controlled one (p=0.038, C.I. 1.029 to 1.387)

BAR CHART OF BURST ABDOMEN VS METHOD OF SUTURING



MS= METHOD OF SUTURING; 1= CONTINUOUS, 2=INTERRUPTED X SUTURE OUTCOME=BURST ABDOMEN; 1=BURST,2=NO BURST

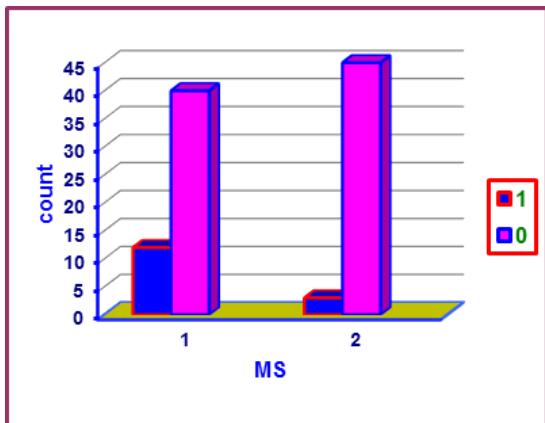


TABLE – 3 SEX DISTRIBUTION OF CASES IN RELATION TO OUTCOME

Outcome	Sex				Total	
	Male		Female		No.	%
	No.	%	No.	%		
Burst	10	10	05	05	15	15
No-burst	59	59	26	26	85	85
Total	69	69	31	31	100	100

There were 10 male patients and 5 female patients who suffered from burst abdomen. This may be because 69% of total sample were male.

Out of total of 100 patients incorporated in this of study 69 male and 31 female. In continuous Arm out of 53 patients 38 were male and 19 were female. In interrupted arm out of 48 patients 31 were male and 12 were female.

Out of 15 patients who developed burst abdomen 10 were male and 5 were female.

DISCUSSION

- Wound dehiscence is the most important cause of postoperative morbidity after emergency or elective laparotomy. It is associated with high morbidity (approx.40%) and mortality (approx.18%) in aged or underfed patients in whom wound dehiscence represents a

final supplementary insult to their previously frazzled physiology.

- An RCT comparing interrupted x– type suture vs. continuous type suturing in reference to prevention of burst abdomen was conducted by Dr Anurag Srivastava et al in AIIMS New Delhi, India. They randomized 210 patients into continuous and interrupted suture group for both emergency and elective midline laparotomy. Out of 46 patients' one patient develop burst abdomen, in the x- type suturing group and out of 54 patients 8 patients develops burst abdomen, in the continuous type suturing group following emergency laparotomy. The RR for burst abdomen in continuous group was 0.15(95% Confidence Interval: 0.02 to 1.13, p=0.028
- In a study by Muhammad Tariq et al, Department of surgery, services hospital, Lahore, Pakistan, compared two suturing techniques, interrupted mass closure and continuous mass closure with poly propylene in midline laparotomy wounds. They came out with conclusion that the closure of laparotomy wound by interrupted mass closure technique with poly propylene no 1 is better closure technique with low rate of wound infection and wound dehiscence as compared with continuous suturing technique with same suture material.
- In a continuous type of suturing cutting out of even a single bite of tissues leads to opening of the whole wound and may be this is the only region for high percentage of burst with contentious type suturing following emergency laparotomy. Results indicate that patients posted for emergency laparotomy in our hospital having better postoperative period whose abdomen was closed with interrupted closure with x-technique.

CONCLUSION

It was concluded that patients posted for laparotomy for emergency/elective conditions having multiple risk factors detrimental to wound healing fared better with interrupted x-type fascial closure and developed less no. of burst abdomen thus this technique can significantly reduce burst abdomen in patients undergoing laparotomy.