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Comparative Study Of Conventional Closure Versus Smead Jones Technique Of Closure Of Midline Laparatomy Wounds After Emergency Midline Laparatomies

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Abstract :
AIM AND OBJECTIVES OF THE STUDY :
The objective of this study is to compare the incidence of wound infection and wound dehiscence and the duration of hospital stay between conventional and smead jones technique of midline laparotomy wound closure.
MATERIALS AND METHODS:
This study was conducted in 80patients grouped into two of 40 each who underwent emergency midline laparatomies for various indications. This study compared the incidence of wound infection, wound dehiscence, incisional hernia, duration of surgery and duration of hospital stay.
CONCLUSION:
As per the data provided it has been clearly seen that eventhough the duration of surgery is more in patients closed using Smead Jones technique, the incidence of wound infection, wound dehiscence, duration of hospital stay and incidence of inscional hernia formation is less when compared to the patients whose abdomen was closed using the conventional continuous technique. Hence the technique should be considered.

Keywords: *laprotomy closure, smead jones, wound dehiscence*

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I. Introduction

Wound infection, wound dehiscence are the most dreaded complications that a patient and a surgeon faces in the postoperative period. It is of great concern because of the risk of evisceration, the need for some form of intervention and possibility of repeat dehiscence, surgical wound infection and over a long term, incisional hernia formation. Acute wound failure occurs in approximately 1% to 3% of patients who undergo an abdominal operation. Dehiscence most commonly develops 7 to 10 days postoperatively but may occur anytime after surgery.A multitude of factors may contribute to wound dehiscence. Acute wound failure is often related to technical errors in placing sutures too close to the edge, too far apart, or under too much tension Local wound complications such as hematoma and infection can also predispose to localized dehiscence. In fact, a deep wound infection is one of the most common causes of localized wound separation. Increased intra-abdominal pressure (IAP) is often an important cause for wound disruption and factors that adversely affect wound healing are cited as contributing to the complication. In elective settings, the rate of wound failure is similar whether closure is accomplished with a continuous or interrupted technique. In emergency settings, however, continuous closure is worrisome because suture breakage in one place weakens the entire closure.

II. Aim And Objectives:

The objective of this study is to compare the incidence of wound infection and wound dehiscence and the duration of hospital stay between conventional and smead jones technique of midline laparotomy wound closure

III. Materials And Methods:

III A: AIM AND OBJECTIVES OF THE STUDY

The objective of this study is to compare the incidence of wound infection and wound dehiscence and the duration of hospital stay between conventional and smead jones technique of midline laparotomy wound closure.

III A. INCLUSION CRITERIA

1. Age >18 yrs
2. Patients consented to the study according to designated proforma
3. Both sexes
4. Emergency laparatomies

III B. EXCLUSION CRITERIA

1. Age <18yrs
2. Immunocompromised states
3. Patients not consented to the study according to designated proforma
4. Diabetic

IV. Analysis:

Data analysis was done using SPSS 18 software. Range, frequencies, percentages, means, standard deviations, chi square and 'p' values were calculated by One way ANOVA and Chi-square test was used to test the significance of difference between quantitative variables.

In the prospective study on efficacy of Smead Jones Technique technique for rectus sheath closure for all midline emergency laparatomies in prevention of wound infection, wound dehiscence, inscional hernia conducted in the Department of General surgery at Govt Rajaji Hospital Madurai, for the period of 18 months, a total of 80 patients who underwent emergency midline laparatomies for various indications were included and randomized into two groups, of 40 patients each Group

A- Smead Jones Technique Group
B- Continuous Technique

V. Methodology

Patients were included in two groups:
Group 'A' and Group 'B'.
Group A : Those patients who underwent conventional closure with 1 size prolene suture. Conventional closure included closure of rectus fascia with muscle first in a continuous fashion. The sutures were placed 2 cm from the edge of the linea alba on both sides and 1 cm was maintained between two adjacent sutures. Following this skin was closed with interrupted ethilon 2-0 sutures .
Group B:Those patients who underwent Smead Jones "far-near-near-far" technique of abdominal wall closure. This technique includes sutureapproximation of rectus sheath with muscle in one layer, in an intermittent fashion using 1 prolene. The entry and exit of prolene was 2 cm from the wound edges and 1 cm from the edge of linea alba on either side. The distance between two adjacent sutures was 1 cm . The skin was sutured separately with 2-0 ethilon. Primary outcome measures the incidence of wound infection and abdominal wall dehiscence at the end of 15 days by the evaluating surgeon.
Follow up:
All patients were discharged after suture removal on 10th postoperative day and were followed on 15th day and then monthly up to 6 months year.

VA. SOURCE OF DATA:

All patients satisfying inclusion criteria admitted in General Surgery Department, Government Rajaji Hospital and followed for a period of 18 months.

VB.METHOD OF COLLECTION OF DATA:

All patients within the inclusion criteria was followed for 18 months period and were divided into two categories and followed up and findings were collected.

VC.DATA ANALYSIS :
Using Chi square test, Student paired t test

CONSORT DIAGRAM

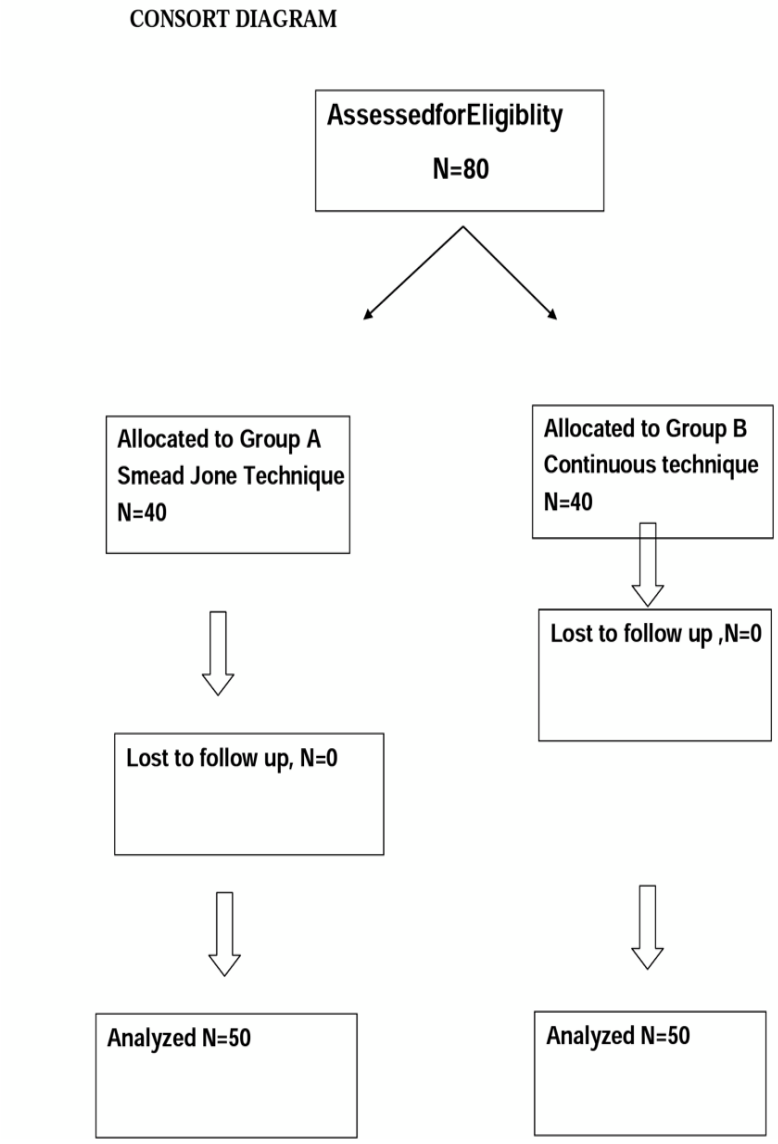
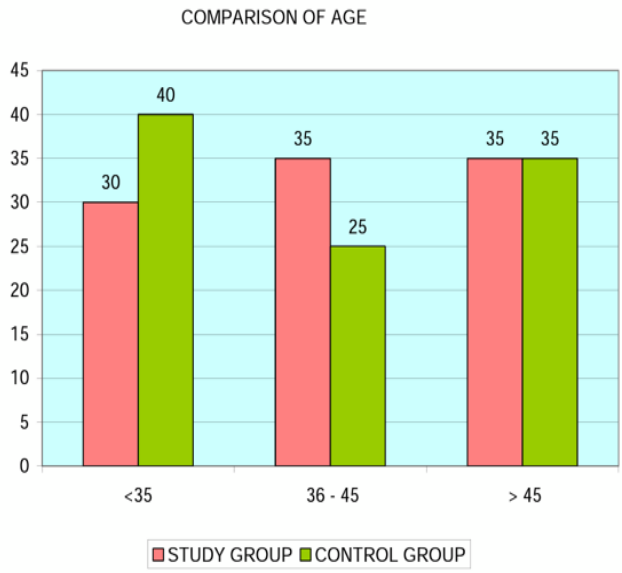


TABLE – 1:

AGE

AGE	STUDY GROUP	%	CONTROL GROUP	%
<35	12	30	16	40
36 - 45	14	35	10	25
> 45	14	35	14	35
TOTAL	40	100	40	100
Mean	42.4		41.7	
SD	11.927		13.607	
P'value	0.807 Not Significant			



AGE

AGE	STUDY GROUP	%	CONTROL GROUP	%
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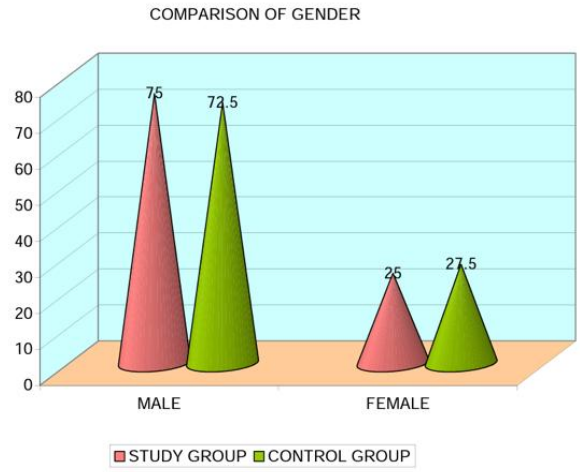
36 - 45	14	35	10	25
> 45	14	35	14	35
TOTAL	40	100	40	100
Mean	42.4		41.7	
SD	11.927		13.607	
P'value	0.807 Not Significant			

INFERENCE: The mean age for both the study and control groups is more or less the same

TABLE – 2: SEX

SEX	STUDY GROUP	%	CONTROL GROUP	%
MALE	30	75	29	72.5
FEMALE	10	25	11	27.5
TOTAL	40	100	40	100
P'value	1.00 Not Significant			



INFERENCE: The number of males and females included in both study and control are the same

TABLE – 3

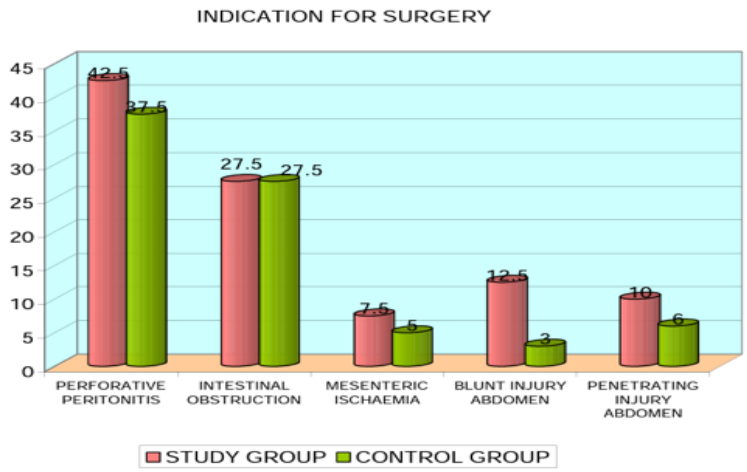
INDICATION OF SURGERY

INDICATION FOR SURGERY	STUDY GROUP	%	CONTROL GROUP	%
PERFORATIVE PERITONITIS	17	42.50	15	37.50
INTESTINAL OBSTRUCTION	11	27.50	11	27.50
MESENTERIC ISCHAEMIA	3	7.50	5	12.50
BLUNT INJURY ABDOMEN	5	12.50	3	7.50
PENETRATING INJURY ABDOMEN	4	10.00	6	15.00
TOTAL	40	100.00	40	100.00
P'value	0.822 Not Significant			

TABLE – 4

METHOD OF CLOSURE

METHOD OF CLOSURE	STUDY GROUP	%	CONTROL GROUP	%
SMEAD JONES TECHNOQUE	40	100.00	0	0.00
CONTINOUS	0	0.00	40	100.00
TOTAL	40	100.00	40	100.00
P'value	<0.001 Significant			

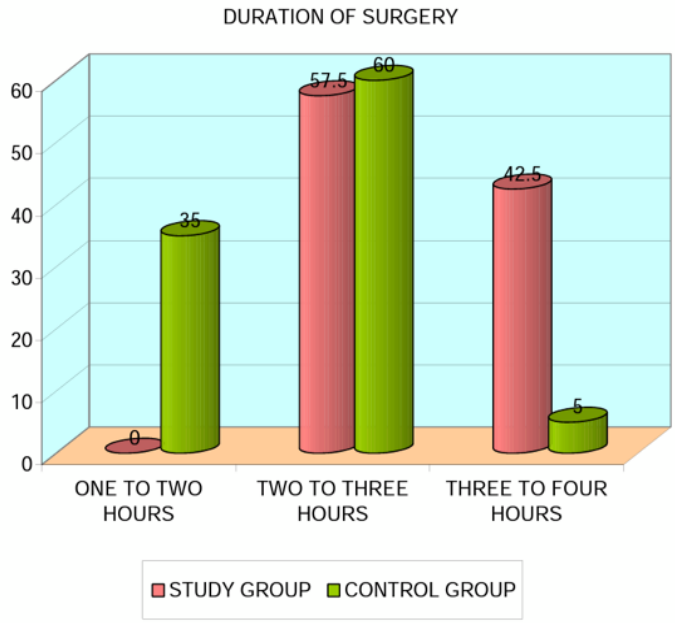


INTERFENCE: Frequency of indications for surgery in both the study and control group is the same

TABLE – 5

DURATION OF SURGERY

DURATION OF SURGERY	STUDY GROUP	%	CONTROL GROUP	%
ONE TO TWO HOURS	0	0.00	14	35.00
TWO TO THREE HOURS	23	57.50	24	60.00
THREE TO FOUR HOURS	17	42.50	2	5.00
TOTAL	40	100.00	40	100.00
Mean	2.425		1.7	
SD	0.5		0.56	
P'value	<0.001 Significant			
	Duration of surgery significantly high in study group			

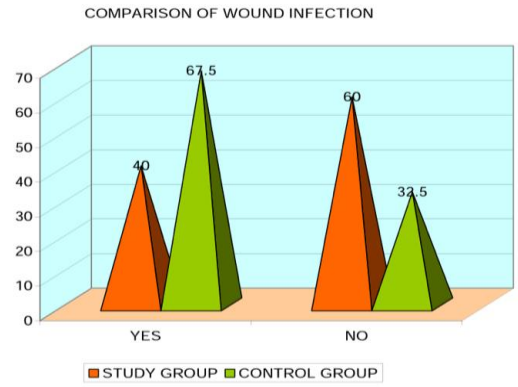


INFERENCE: Duration of surgery is significantly high in the study group

TABLE – 6

WOUND INFECTION

WOUND INFECTION	STUDY GROUP	%	CONTROL GROUP	%
YES	16	40.00	27	67.50
NO	24	60.00	13	32.50
TOTAL	40	100.00	40	100.00
P'value	0.025 Significant			

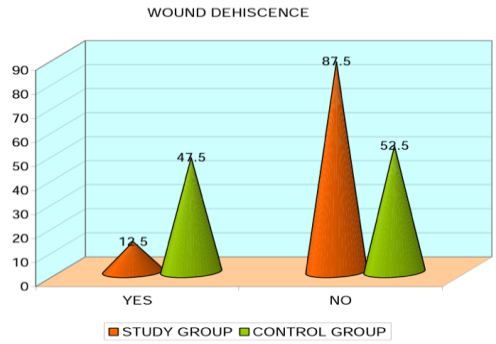


INFERENCE: Wound infection is significantly low in study group

TABLE – 7

WOUND DEHISCENCE

WOUND DEHISCENCE	STUDY GROUP	%	CONTROL GROUP	%
YES	5	12.50	19	47.50
NO	35	87.50	21	52.50
TOTAL	40	100.00	40	100.00
P'value	0.002 Significant			

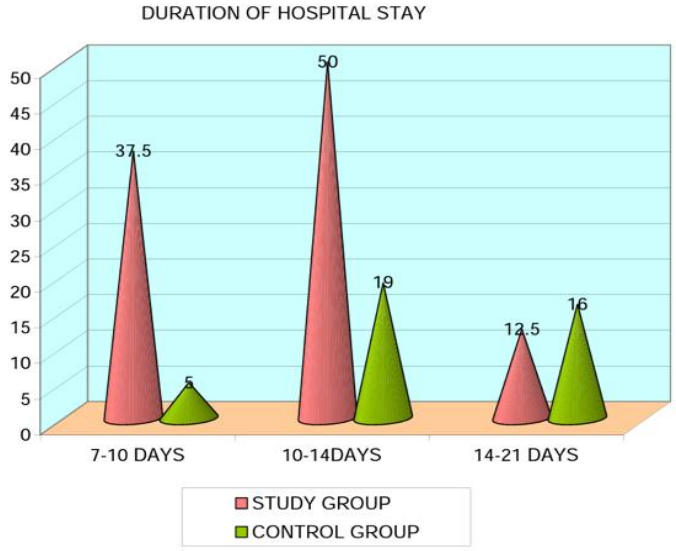


INFERENCE: Wound dehiscence is low in study group

TABLE – 8

DURATION OF HOSPITAL STAY

DURATION OF HOSPITAL STAY	STUDY GROUP	%	CONTROL GROUP	%
7-10 DAYS	15	37.50	5	12.50
10-14DAYS	20	50.00	19	47.50
14-21 DAYS	5	12.50	16	40.00
TOTAL	40	100.00	40	100.00
Mean	1.75		2.275	
SD	0.67		0.68	
P'value	<0.001 Significant			
	Duration of hospital stay significantly low in study group			

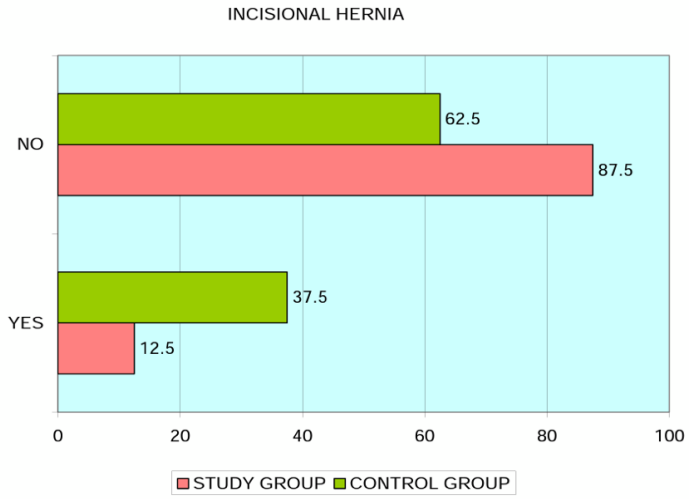


INFERENCE: Duration of hospital stay is significantly low in study group

INFERENCE: Incidence of Incisional hernia is significantly low in study group

TABLE – 9: INCISIONAL HERNIA

INCISIONAL HERNIA	STUDY GROUP	%	CONTROL GROUP	%
YES	5	12.50	15	37.50
NO	35	87.50	25	62.50
TOTAL	40	100.00	40	100.00
P'value	0.02 Significant			



VI. Discussion

In this study which was conducted on 80 pts grouped into two of 40 each, the following observations were made The study was done in pts of age ranging from 20yrs till 70 yrs. Mean age being 42 in both the study and control group

- The number of male and female patients included in both study and control group is more or less equal. (75%,25%; 72.5%,27.5%)
- Study group showed a significantly decreased rate of postoperative wound infection(40%) when compared to control group(67.5%)
- Study group showed a significantly decreased rate of postoperative wound dehiscence(12.50%) when compared to control group(47.5%)
- Study group showed a significantly decreased rate of postoperative wound infection(40%) when compared to control group(67.5%)
- Study group showed a significantly decreased duration of postoperative hospital stay (mean-1.75 weeks) when compared to control group(mean- 2.275 weeks) But the study group showed a significantly increased duration of surgery(mean-2.425 hrs) when compared to control group(mean1.7hrs)
- Study group showed a significantly decreased rate of incisional hernia formation(12.50%) when compared to control group(37.50%)

VII. Conclusion :

This study was conducted in 80patients grouped into two of 40 each who underwent emergency midline laparatomies for various indications. This study compared the incidence of wound infection, wound dehiscence, incisional hernia, duration of surgery and duration of hospital stay. As per

the data provided it has been clearly seen that eventhough the duration of surgery is more in patients closed using Smead Jones technique, the incidence of wound infection, wound dehiscence, duration of hospital stay and incidence of inscional hernia formation is less when compared to the patients whose abdomen was closed using the conventional continuous technique. Hence the technique should be considered.

REFERENCES

[1]. Tariq M, Jamal A, Khan MA, et al. Comparison of two suturing techniques: Interrupted mass closure and continuous mass closure with polypropelene in laparotomy wound. Pakistan Journal of Medical and Health Sciences 2008;2:174-6.
[2]. Lofty W. Burst abdomen: Is it a preventable condition? Egyptian Journal of Surgery 2009;28:128-32.
[3]. Srivastava A, Roy S, Sahay KB, et al. Prevention of burst abdomen wound by a new technique: A randomized trial comparing continuous versus interrupted X–suture. Indian Journal of Surgery 2004; 66:19-27.
[4]. Blanco E, Aller MA, Ortega L, et al. Vertical figure-of-eight stitches for surgical closure of laparotomies in the rat. Spanish Journal of Surgical Research 2005;8:186-92.
[5]. Ceydeli A, Rucinski J, Leslie W. Finding the best abdominal closure: An evidence–based review of the literature. Current Surgery 2005;62:220-5.
[6]. Waqar SH, Malk ZI, Razzaq A, et al. Frequency and risk factors for wound dehiscence/burst abdomen in the midline laparotomies. J Ayub Med Coll Abbohabad 2005;17:70-3.
[7]. Begum B, Zaman R, Ahmed M, et al. Burst abdomen – A preventable morbidity. Mymensingh Med J 2008;17:63-6.
[8]. Emad Esmat M. A new technique in closure of burst abdomen TI, TIE and TIES incisions. World J Surg 2006;30:1063-73.
[9]. Fleischer GM, Rennert A, Ruhmrt M. Infected abdominal wall and burst abdomen. Chirurg 2000;71:754-62.
[10]. Shukla HS, Kumar S, Misra MC, et al. Burst abdomen and suture material: a comparison of abdominal wound closure with monofilament nylon and chromic catgut. Indian J Surg1981;43:487-91.
[11]. Singh A, Singh S, Dhaliwal US, et al. Technique of abdominal wall closure: a comparative study. Ind J Surg 1981;43:785-90.
[12]. Choudhary SK, Choudhary SD. Mass closure versus layer closure of abdominal wound: a prospective clinical study. J Indian Med Assoc 1994;92:229-32.
[13]. Cleveland RD, Zitsch RP, Laws HL. Incisional closure in morbidly obese patients. Am Surg 1989;55:61-63.
[14]. Fagniez P, Hay JM, Lacaine F, et al. Abdominal midline incision closure. Arch Surg 1985;120:1351-3.
[15]. McNeill PM, Sugerman HJ. Continuous absorbable versus interrupted nonabsorbable fascial closure. Arch Surg 1986;121:821-3.
[16]. Richards PC, Balch CM, Aldrete JS. Abdominal wound closure. A randomized prospective study of 571 patients comparing continuous vs. interrupted suture techniques. Ann Surg 1983;197:238-43.
[17]. Mayo, Ch. W. and Lee, M. J.: Separations of Abdominal Wounds. A. M. A. Arch. Surg., 62:883, 1951.
[18]. Madden, J. L.: Atlas of Technics in Surgery. Volume 1. Second edition. New York, Appleton-Century-Croft, 1964.
[19]. Efron, G.: Abdominal Wound Distruption. Lancet, 19:1287, 1965.
[20]. Altemeier, W. A. and Berkich, E.: Wound sepsis and Dehiscence. In Hardy, J. D. (ed.) Critical Surgical Illness, Philadelphia, W. B. Saunders Company, 1971.
[21]. Hunt, T. K.: Wound Complications. In Hardy, J. D. (ed.) Management of Surgical Complications, Philadelphia, W. B. Saunders Company, 1975.
[22]. Singh A, Singh S, Dhaliwal US, Singh S. Technique of abdominal wall closure: a comparative study. Ind J Surg 1981;43:785 – 90.
[23]. Shukla HS, Kumar S, Misra MC, Naithani YP. Burst abdomen and suture material: a comparison of abdominal wound closure with monofilament nylon and chromic catgut. Indian J surg. 1981;43:487 – 91.
[24]. Shukla HS, Kumar S, Misra MC, Naithani YP. Burst abdomen and suture material: a comparison of abdominal wound closure with monofilament nylon and chromic catgut. Indian J surg. 1981;43:487 – 91.
[25]. Choudhary SK, Choudhary SD, Mass closure versus layer closure of abdominal wound: a prospective clinical study. J Indian Med Assoc. 1994;92:229 – 32.
[26]. Niggebrugge AH, HansenBE, Trimbos JB, Van de Velde CJ, Zwaveling A, Mechnical Factors influencing the incidence of burst abdomen. Eur J Surg 1995;161:655 – 61.]. Fleischer GM, Rennert A, RĂ 1/4 hmer M. Infected abdominal wall and burst abdomen Chirurg. 2000;71:754 – 62.
[27]. Anurag Sirvastava, Sapandeep Roy; K.B. Sahay, Vathaluruseenu, Arvind Kumar, Sunil Chumber, et.al Prevention of burst abdominal wound by a new technique: A randomized trial comparing continuous versus interrupted X- suture Indian J Surg. 2004;66:19 – 27.
[28]. Waqar Sh, Malk ZI, Razzaq A, Abdullah Mt. Shaima A.Zahid Ma. frequency and risk factors for wound dehiscence / burst abdomen in the midline laparotomies. J. Ayub Med Coll. Abbohabad. 2005;17:70 – 3.
[29]. M. Emadesmat. A new technique in closure of burst abdomen TI, TIE and TIES incisions World J. of surg. 2006;30:1063

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