



**ORIGINAL RESEARCH PAPER**

**General Surgery**

**A STUDY ON LAYERED CLOSURE VERSUS MASS CLOSURE OF LAPAROTOMY INCISIONS**

**KEY WORDS:** Layered closure, Mass closure, Midline laparotomy incision

**Dr. Therani Dorababu\***

Post graduate, Meenakshi Medical College Hospital & Research Institute, Enathur, Karrapettai Post, Kanchipuram-631 552. Tamilnadu. \*Corresponding Author

**Dr. Kumaran R**

Post graduate, Meenakshi Medical College Hospital & Research Institute, Enathur, Karrapettai Post, Kanchipuram-631 552. Tamilnadu.

**ABSTRACT**

**Background:** The ideal method of abdominal wound closure remains to be discovered. It should be technically so simple that the results are as good in the hands of a trainee as in those of the master surgeon. The best abdominal closure technique should be fast, easy while preventing both early and late complications. Present study is undertaken to compare the two methods (LAYERED closure and MASS closure) of laparotomy wound closure in relation to post-operative complications, time for wound closure in both groups and also to decide the most effective method among the two.

**Methods:** This study was conducted in department of surgery at a tertiary care teaching hospital at KANCHIPURAM (TAMILNADU) from DECEMBER 2019 to DECEMBER 2020. On admission, patients suspected of having intraabdominal pathology, a thorough clinical examination and general assessment was done. Necessary radiological and biochemical investigations were done to support the diagnosis. After confirmation of diagnosis patients were subjected for exploratory laparotomy. The laparotomy wound was closed with either by Mass closure or Layered closure technique. Patients were followed up for 6 months in post-operative period for detection of late complications.

**Results:** Total 60 patients of were studied. Majority of patients were in 66 -75 age group. Male outnumbered the females. Incidence of early complications like seroma, wound infection is more in layered closure group as compared to mass closure. Mean wound closure time is more in layered closure group.

**Conclusions:** Mass closure technique is less time consuming, safe for closure of midline laparotomy incisions.

**INTRODUCTION:**

Despite the advances in surgical technique and materials, abdominal fascial closure had remained a procedure that often reflects a surgeon's personal preference with reliance on traditional and anecdotal experience<sup>1</sup>. It should be simple, easy, fast with good results. Many trials carried out for determination of ideal technique for abdominal fascial closure, lacked sufficient power to show significant treatment differences also the results were conflicting and had left many surgeons uncertain about it.\*this study compares (layered and mass closure) of laparotomy wounds in relation to time taken for wound closure, post op complications so that the best effective method can be determined.

**METHODS:**

This prospective comparative study was carried out after obtaining the Ethical committee clearance from the institute in the department of general surgery, Meenakshi medical college and reaserch institute. the present study was carried out for one year (December 2019 to December 2020) on 60 patients in which 30 patients are subjected to layered closure and remaining for mass closure. Both groups were compared for mid line vertical incision, elective laparotomy cases and PDS suture material.

**INCLUSION CRITERIA:**

All Patients of age between 25 to 70 years irrespective of sex who are undergone mid line laparotomy incision.

**EXCLUSION CRITERIA:**

1. Emergency laparotomy cases.
2. Patients below 25 and above 70 years. All immuno compramisid patients

On admission patient was subjected to detailed history and clinical examination, necessary laboratory and radiological investigations done. out of 60 patiens under going laparotomy 30 under went layered closure amd 30 with mass closure.

**Mass closure:**

In mass closure parietal peritoneum, posterior rectus sheath and anterior rectus sheath were approximated as single layer with PDS in continuous running sutue without inter locking.

**Layered closure:**

Parietal peritoneum is closed as separate layer and posterior and anterior rectus closed as another layer with PDS in continuous running suture without interlocking. All the patients were followed for early post op complications like hematoma, seroma, wound infection and late complications like incisional hernia, stitch sinus.

**Data mangment and analysis:**

Data was coded and entered in ms excel sheet and analysis done using spss 17. results were drawn on the basis of analysis and observation and compared with other relevant literature

**RESULTS:**

During study period 60 patients having intra-abdominal pathology and undergone laparotomy by mid line incisions were included.

**Table: 1 Age distribution**

Age (in years)	Total cases
25 -35	13(21.66%)
36-45	10(16.66%)
46-55	10(16.66%)
56-65	7(11.66%)
66-70	20(33.33%)

**Table: 2 Sex distribution**

Sex	Total cases
Male	40(66.66%)
female	20(34.44%)

Male to female ratio-2:1

**Table: 3 Intra-abdominal pathologies related with mid line laprotomy**

Intra-abdominal pathologies	Total cases
Upper GI malignancy	20(33.33%)
Lower GI malignancy	20(33.33%)
CBD exploration	5(8.33%)
Pseudo cyst pancreas	2(3.33%)
splenomegaly	5(8.33%)

Retro peritoneal tumors	2(3.33%)
Gastric outlet obstruction	5(8.33%)
Hydatid cyst of liver	1(1.66%)

**Table: 4 Post-operative complications**

Complications	Mass closure	Layered closure
Hematoma	0	0
seroma	0	1
Wound infection	3	2
Incisional hernia	3	3
Stitch sinus formation	0	1

**Table: 5 Mean closure time**

Type of closure	Mean closure time(minutes)
Layer closure	22
Mass closure	17

**DISCUSSION:**

In this study wound infection rate in mass closure rate is 10% which is comparable with other studies<sup>4-6</sup>. incidence of incisional hernia 6.6% which is comparable with other studies<sup>25,18,12</sup>, the mean closure time for layered closure and mass closure is 22 min and 17 min respectively which is significantly correct p value .

**CONCLUSION:**

Mass closure is more effective than layered closure in terms of less time consuming and less post operative complications.

**REFERENCES:**

1. Ceydeli A, Wise L. Finding the best abdominal closure: an evidence based review of literature. *Curr Surg*. 2005;62:2205.
2. Ellis H, Heddle R. Closure of abdominal wound. *JRSoc Med*. 1979;72:17-8.
3. Hodgson NC, Malthaner RA, Ostbye T. The search for an ideal method of abdominal fascial closure: a meta-analysis. *Ann Surg*. 2000;231:436-42.
4. Wissing J, Van Vroonhoven TJ, Schattenkerk ME. Fascia Closure after midline laparotomy: results of a randomised trial. *Br JSurg*. 1987;74:738-41.
5. Kendall WH, Brennan G, Guillou J. Suture length ratio and the integrity of midline and lateral paramedian incisions. *Br JSurg*. 1991;78:705-7.
6. Israelsson LA, Jonsson T. Closure of the midline laparotomy incisions with polydioxanone and nylon: the importance of suture technique. *Br J Surg*. 1994;81:1606-8.
7. Leaper DJ, Pollock AV, Evans M. Abdominal wound closure: a trial of nylon, polyglycolic acid and steel sutures. *Br JSurg*. 1977;64:603-6.
8. Khan NA, Almas D, Shehzad K. Comparison between delayed absorbable polydioxanone and non-absorbable (prolene) suture material in abdominal wound closure. *PAFMJ* 2009;59(1)
9. Israelsson LA, Jonsson T. Closure of the midline laparotomy incisions with polydioxanone and nylon: the importance of suture technique. *Br J Surg*. 1994;81:1606-8.
10. Bloemen A, Dooren P, Huizinga BF, Hoofwijk AGM. Randomized clinical trial comparing polypropylene or polydioxanone for midline abdominal wall closure. *Br JSurg*. 2011;98:633-9.
11. Murtaza B, Khan NA, Sharif MA. Modified abdominal wound closure technique in complicated/high risk laparotomies. *J coll physicians Surg Pak*. 2010;20:37-41.
12. Brolin RE. Prospective randomised evaluation of midline fascial closure in gastric bariatric operations. *Am Surg*. 1996;172:328-31.
13. Krukowski ZH, Matheson NA. 'Button hole' incisional hernia: a late complication of abdominal wound closure with continuous non-absorbable sutures. *Br JSurg*. 1987;74:824-5.
14. Ausobsky JR, Evans M, Pollock AV. Does mass closure of midline laparotomies stand the test of time? A random control clinical trial. *Ann R Coll Surg Engl*. 1985;67:159-61.
15. Pollock AV, Greenal MJ, Evan M. Single layer mass closure of major laparotomies by continuous suturing. *JRSoc Med*. 1917;72:889-93.
16. Deshmukh SN, Maske AN. Mass closure versus layered closure of midline laparotomy incisions: a prospective comparative study. *Int Surg J* 2018;5:584-7.